THE IMPACT OF E-COMMERCE

ON

BUSINESS VALUE IN SERVICE ORGANISATIONS

ABSTRACT

THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

Doctor of Philosophy

IN

BUSINESS ADMINISTRATION

BY

MAIRAJ SALIM

Under the Supervision of

DR. JAVAID AKHTER

Associate Professor of Business Administration

Faculty of Management Studies and Research

DEPARTMENT OF BUSINESS ADMINISTRATION

FACULTY OF MANAGEMENT STUDIES AND RESEARCH

ALIGARH MUSLIM UNIVERSITY

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ABSTRACT

- *Introduction*
- *Contents of the Thesis*
- *Objectives of the Study*
- *Methodology of Research*
- *Main Findings of the Study*

Introduction

The thesis deals with the study of "The Impact of Electronic Commerce on Business Value in Service Organisations". Though the scope of the study extends to many service organisations, emphasis has been laid down on the study of Banking, Finance, Insurance, Entertainment, Education, Software, Consultancy, Electronic Commerce Solution and Telecommunication organisations.

Electronic Commerce refers to all value transactions involving the transfer of information, products and services or payments via electronic networks. Electronic Commerce is recently a new mode of conducting business and its history can be traced back to1960s.

When organisations redefine the products, processes and business models using technology to change the ways products are conceived, marketed, delivered it is said to have derived the business value. The main components of Business Value are Product Promotion, New Sales Channel, Direct Saving, Time to Market, Customer Service, Brand Image, Customer Relationship, Technology and Laboratory Learning, New Product Capabilities and New Business Models.

Through this study, area of interest has been explored after an extensive literature review which shows that no research have been conducted before on this aspect of The Impact of Electronic Commerce on Business Value in Service Organisations.

Contents of the Thesis

The study has been divided into five chapters. The first chapter presents an overview of electronic commerce followed by meaning and definitions, historical background, benefits, barriers, views, types of e-commerce, strategies challenges etc. It aims at providing the reader an overall idea about the nature and activities of electronic commerce.

The second chapter entitled 'The Concept of Business Value and Measurement' briefly describes the meaning and other relevant specific details of business value.

The methodology of research adopted for the purposes of the present study has been presented in chapter three. The chapter consists of extensive literature review to establish the need for study, the scope of study, conceptual framework of electronic commerce, impact of electronic commerce, survey reports, case studies, present models of electronic commerce, data collection methods and procedures, hypothesis and analytical techniques used have been included in this chapter, under separate sections.

Chapter four of the thesis analyses and interprets the overall overview on the Impact of Electronic Commerce on Business Value on all the sectors of service organisations as well as with reference to Annual Group Turnover, percentage of Annual IT spending and percentage of Electronic Commerce spending.

Chapter five presents suggestions and recommendations of this study.

References used in the study appear at the end of each chapter. The list of books, journals, magazines, web sites visited and referred to have been appended at the end of the thesis in the form of Bibliography. Besides this general information about e-commerce has been given in Appendix I, II, and III. In Appendix IV questionnaire, glossary, useful web sites and e-mail Ids are given and in the last Appendix V calculations for F and Z tests are given.

Objectives of the Study

Important Objectives of the study are stated as follows:

- To what extent Electronic Commerce has the Impact on Business Values on all the sectors of service organisations.
- To what extent Electronic Commerce has had a varying Impact on Business Values with reference to Annual Group Turnover of the organisations
- To what extent Electronic Commerce shows Impact on Business Values with reference to Annual percentage of IT spending.
- To what extent Electronic Commerce has the maximum Impact on Business Values with reference to percentage of Electronic Commerce spending in an organisation.

Methodology of Research

Keeping in view the objectives of the study, and in order to justify the need for research, the researcher has conducted a review of existing literature in the subject. This led to identification of research gaps.

In formulating the research problem, the major components of Business Values have been chosen for the present study. In view of the nature of study, exploratory research design has been selected. The researcher has constructed a questionnaire based on the dimensions of these Business Values and respondents in selected service organisations were ask to rank the extent of the Impact of Electronic Commerce on these Business Value components. The framework proposed by Michael Bloch, Yves Pigneur & Arie Segev in their paper On the Road of Electronic Commerce--A Business Value Framework, Gaining Competitive Advantage and Some Research Issues has been used.

In collecting information, primary sources have been considered as population sample. Data has been collected through a structured questionnaire developed on a five-point scale. Data was entered on tabulation sheet using MS Excel. Thereafter overall mean of various scores was taken. The mean was then compared with the mean of different components of Business Values. The comparison could have resulted in difference between population mean and mean of specific segment of population. In order to know that this difference was statistically significant or not popular F and Z tests were applied.

In other words, had there been an equal number of respondents in each group of subgroup or more than our present sample size i.e. 135 we would have obtained same mean. This is our null hypothesis (H_0). We have tested this at significance level of 5% in both the cases and findings would have been more appropriately discussed and analysed at various level of significance.

Main Findings of the Study

On the basis of analysis following results are made on all the sectors of service organisations of the Impact of Electronic Commerce on Business Value.

Brand Image- Analysis shows Electronic Commerce has the maximum impact on Brand Image. Banking and Electronic Commerce Solution industry have taken full advantage of the opportunities offered by Electronic Commerce.

Customer Service- Findings show that Customer Service has maximum impact on Software, Consultancy, Telecommunication and Entertainment industries. These industries enjoyed the most benefits offered by Electronic Commerce.

New Business Models- Analysis shows that no particular service organistion has taken full advantage of the opportunities offered by Electronic Commerce business models on any of the components of Business Value. This also shows that all service organisations can take advantage of Electronic Commerce business models in developing their business models.

Product Promotion- Overall analysis shows that no service organisation has taken full advantage of Electronic Commerce opportunities offered by it, which shows that all service organisations can promote their products using Electronic Commerce.

Customer Relationship- Customer Relationship has the maximum impact on Finance and Insurance companies, which shows that these industries have taken full, benefits of Customer Relationship related opportunities offered by Electronic Commerce.

Direct Saving- Analysis on the basis of service organistions shows that Education and Other companies have the maximum impact on Direct saving using Electronic Commerce.

Time to Market- Overall maximum impact of Electronic Commerce on Time to Market shows that no service organistaions has the impact on any of the Business Value components, which shows that Electronic Commerce helped all service organisations equally for its customers to give Time to Market.

Technology and Laboratory Learning- Technology learning after Time to Market shows that it does not have any impact on any of the components of Business value in any of the service organisations, this shows that it offers opportunities to all service organisations for new Technology and Laboratory Learning either equally or no impact at all.

New Sales Channel- Comparing it with different service organisations analysis shows that no service organisation has taken full advantage of the opportunities offered by Electronic Commerce for New Sales Channel which shows that all service organisations can improve their sales channel by using Electronic Commerce.

New Product Capabilities- Analysis shows that this component of Business Value does not show any impact. Therefore organisations can take full advantage of the opportunities offered by Electronic Commerce for developing new product capabilities.

On the basis of findings of present study following results are made on the Impact of Electronic Commerce on Business Value with reference to Annual Group Turnover, percentage of Annual IT spending, percentage of Electronic Commerce spending.

Brand Image- Findings show that apart from Banking and Electronic Commerce Solution industry service organisations with Annual Group Turnover between 5500 and 10000 Cr and where % of Electronic Commerce spending <20% has maximum impact on Brand Image of the opportunities offered by Electronic Commerce.

Customer Service- Analysis shows that service organisations with Annual Group Turnover between 500-1500Cr and Annual IT spending <5Cr has maximum impact on Customer Service in improving their services of the benefits offered by Electronic Commerce.

New Business Models- Overall analysis shows that no service organisation with reference to Annual Group Turnover, Annual IT spending, and % of Electronic Commerce spending show any significant impact on any of the components of Business Value.

Product Promotion- Comparing it with different service organisations with reference to Annual Group Turnover, Annual IT spending, % of Electronic Commerce spending

companies with Annual IT spending between 250 and 4000 Cr has the maximum impact on Product Promotion and can be followed by other organisations as well to take full advantage offered by Electronic Commerce.

Customer Relationship- Overall Customer Relationship has the maximum impact on companies with Annual Group Turnover 50-500 Cr, Annual IT spending <5 Cr and % of Electronic Commerce spending 50-100% and have taken full advantages on Customer Relationship by using Electronic Commerce.

Direct Saving- On the basis of analysis Electronic Commerce has the maximum impact on Direct Saving on companies with Annual Group Turnover exceeding 10000 Crores. There were of five organisations in the sample, where the turnover was in the range of billion/ million dollars. This is an exception and hence cannot be generalised.

Time to Market- Overall maximum impact of Electronic Commerce is on Time to Market with reference to % of Electronic Commerce spending between 20-50%.This shows that Electronic Commerce have given full support to companies and their customers on Time to Market in building its image and it may be followed by other organisations as well.

Technology and Laboratory Learning- Technology and Laboratory Learning does not have maximum impact on any of the Business Value components in any organisation and all service organisations can take advantages from it.

New Sales Channel- Organisations with Annual Group Turnover between 1500-5500Cr show maximum impact on New Sales Channel and can be followed by other organisations as well to take advantage of the opportunities offered by Electronic Commerce.

New Product Capabilities- Findings of the analysis show that this component of Business Value does not show any impact comparing it with different service organisations Annual Group Turnover, Annual IT spending and % of Electronic Commerce spending and is applicable to all service organisations to have maximum impact for developing their new products.

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CERTIFICATE

Certified that ***Mr. Mairaj Salim***, a candidate for the degree of ***Doctor of Philosophy*** in this department, has completed his thesis entitled ***" The Impact of E-Commerce on Business Value in Service Organisations".***

To the best of my knowledge and belief the research work is original one based on the investigation made, data collected and analysed by him and it has not been submitted in any other university or institution for the award of any degree or diploma.

9/9/02

Sept 9, 2002

Dr. Javaid Akhter
(Associate Professor)

PREFACE

Electronic Commerce is relatively a recent mode of conducting commerce and has assumed great significance in the present day world. Today, modern man is afflicted with Internet and its various kinds. The concept of the Internet can be traced back 1960s in US department of defense. After emergence of Electronic Commerce different models have been developing gradually.

This thesis is a modest attempt in highlighting the Impact of Electronic Commerce on Business Values on Service Organisation as well as with reference to its annual group turn over, percentage of IT spending, percentage of Electronic Commerce spending, these Business Values are Product Promotion, New Sales Channel, Direct Saving, Time to Market, Customer Service, Brand Image or Corporate Image, Technology Learning and Organizational Laboratory, Customer Relationship, New Product Capabilities, New Business Models which are analyzed from 135 respondents of different organisation through questionnaire based on an article by

The thesis is divided into five chapters. *Chapter one* (Introduction) presents the meaning and definitions of Electronic Commerce, the brief history of Electronic Commerce, the three pillars of Electronic Commerce, the Electronic Commerce benefits, the barriers and risks of Electronic Commerce, the views and trust in Electronic Commerce, the types of Electronic Commerce, the application of Electronic Commerce models, the Electronic Commerce project life cycle, the types of relations in Electronic Commerce, the infrastructure of Electronic Commerce, the legal issues of Electronic Commerce, the challenges and opportunities of Electronic Commerce, and finally, the future of Electronic Commerce. *Chapter two* (The Concept of Business Value and Measurement) explains the conceptual preview of meaning of Business Value, measurement of Business Value, measurement of the Impact of Electronic Commerce, recent researches on Business Value. These first two chapters provide the basis on which the model of research is designed.

Chapter three (Research Methodology) presents the need for research, the objective and scope of research, review of present available literature for finding a research gap, the conceptual framework, the business value of Electronic Commerce, the impact of Electronic Commerce, the survey reports on Electronic Commerce, the methodology of data collection, the present models of Electronic Commerce, the case studies on Electronic Commerce, the data collection in present research, the methodology of data analysis, the data analysis techniques in Electronic Commerce, data analysis in present research, the data presentation and discussion.

Chapter four (Analysis, Discussion and Presentation) presents the analysis of The Impact of Electronic Commerce with reference to service organisations, annual group turn over, and percentage of IT spending, percentage of Electronic Commerce spending.

The final i.e. *Chapter five* (Suggestions and Recommendation) proposes the suggestions and recommendations, the limitations of research, the future direction for research.
Besides this basics of Electronic Commerce is given in Appendix-I, business to business and business to consumer information on Electronic Commerce is given in Appendix-II, Electronic Commerce in selected sector of economy is given in Appendix-III, in Appendix IV questionnaire, glossary, useful websites and e-mail ids are given, in Appendix-V values of F and Z tests with reference to analysis are given and finally the Bibliography providing more than 200 references that could be a rich source for future researchers are given.

The findings of the study may given a direction to the industry association and individual firms about the latest development in the area of Electronic Commerce and act accordingly. For academicians, the study will be useful for critical appraisal of the latest developments in the area of Electronic Commerce and will also prove helpful in providing a direction for future research.

Sept 9, 2002

(Mairaj Salim)

ACKNOWLEDGEMENTS

The present work is an out growth of interest in the area of Electronic Commerce.

In completion of this work a large number of persons have contributed. To list them all would be a tedious job and incomplete at best. However there are some individuals who deserve special mention.

I am grateful to Dr. Javaid Akhter, my supervisor, who teaches management of service organisations. He was always willing to provide time for discussion and evaluation of the ideas and issues. His pedagogic insights helped me in the process of the research.

I am extremely grateful to Prof. S.M. Ozair, Dean and Chairman Faculty of Management Studies and Research, Department of Business Administration, A.M.U and Prof Kaleem Mohd Khan, former Dean and Chairman for their constant source and encouragement. I express my sincere gratitude all the Faculty Members at the Department of Business Administration who have been helpful to me in one-way or the other.

Research Scholars of Department of Business Administration and other Departments of A.M.U were always helpful in many ways deserves special thanks in the completion of this work.

I would like to appreciate the support and cooperation from all the alumni of Department of Business Administration and other people from different organisations for data collection, the e-mail ids of these people are available and can be supplied on request but have not been included.

Thanks to all my friends for constantly prodding me to complete the work.

Finally, words cannot express my deepest gratitude to my father, brother and other family members whose, love, patience and significance make it possible for me to complete my research work with a sense of satisfaction.

Sept 9, 2002

(Mairaj Salim)

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CHAPTER-ONE

INTRODUCTION

1.1 Meaning and Definitions of Electronic Commerce

This part of the chapter explains the meaning and definition of e-commerce. From maximum possible sources, an attempt has been made to explain the meaning and definition of e-commerce, which various authors on the subject have provided. This part lists down those meaning.

A popular site www.uow.edu.au[1], explains e-commerce as literally "doing business electronically" and when the term was first coined it was seen as buying and selling on electronic networks. The traditional view of doing business online includes purchasing products via online services and the Internet as well as electronic data interchange (EDI), in which one company's computer queries and transmit purchase orders to another company's computer.

Electronic Commerce today includes:

- the buying and selling of information as well as products and services.
- the use of telecommunications networks to link organisations and/or individuals.
- sharing business information and maintaining business relationships.
- intra-company, inter-company, and company-to-consumer processes.
- doing business without paper.
- engagement in a wide range of activities up and down the value-added chain both within and outside the organization..
- all computerized inter-company and intra-company functions (such as marketing, finance, selling, and negotiation)
- the use of electronic mail, EDI, file transfer, fax, video conferencing, workflow, or interaction with a remote computer.

According to Cisco System Ink[2], the term e-commerce encompasses any commercial transaction conducted electronically. Simply viewing a web site is not e-commerce, but purchasing a product over the Internet is e-commerce so is exchanging vital information with a supplier or business partner. Electronic commerce can occur over means other than the Internet.

Dibel Research Inc Services[3], explains e-commerce in the following words, it enables businesses to create and manage a dynamic cost-effective Internet stores that provide

customers with a convenient, compelling and secure buying experience when selling products business to business or directly to consumers.

According to site maintained by www.e-envoy.gov.uk[4], it is the exchange of information across electronic networks, at any stage in the supply chain, whether within an organisation, between businesses and consumers, or between the public and private sectors, whether paid or unpaid. The site www.niacc.cc.ia.us[5], explain e-commerce has evolved from its meager notion of electronic shopping to mean all aspects of business and market processes enabled by the Internet and the World Wide Web technologies.

E-Commerce as Online Selling. Narrowly defined, e-commerce means doing business online or selling and buying products and services through Web storefronts. Products being traded may be physical products such as used cars or services (e.g. arranging trips, online medical consultation, and remote education). Increasingly, they include digital products such as news, audio and video, database, software and all types of knowledge-based products. It appears then electronic commerce is similar to catalog shopping or home shopping on cable TV.

E-Commerce as a Market. E-commerce is not limited to buying and selling products online. For example, a neighborhood store can open a Web store and find the world in its doorstep. But, along with customers, it will also find its suppliers, accountants, payment services, government agencies and competitors online. This online or digital partners demand changes in the way we do business from production to consumption, and they will affect companies who might think they are not part of electronic commerce. Along with online selling, electronic commerce will lead to significant changes in the way products are customized, distributed and exchanged and the way consumers search and bargain for products and services and consume them

According to the site emsc.co.uk[6], e-commerce is the exchange of business information using electronic formats, which includes Electronic Data Interchange, or EDI, Electronic Mail, or Electronic mail, Electronic Bulletin Boards (EBB) and Electronic Funds Transfer (EFT). Paul Timmers[7], defines e-commerce as "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct

physical contact". Kolakata defines e-commerce is the delivery of information, products/services, or payments via telephone lines, computer networks, or any other means.

Higgens.freeserve.co.uk[9], explains electronic commerce is the description of the business process by which companies trade goods and or services on the Internet. This is done in many ways, the most common of which being the World Wide Web using browser compatible documents e.g. HTML (Hyper Text Mark-up Language). According to Jaiswal[10] e-commerce is the business environment in which information for the buying and selling, and transportation of goods and services moves electronically. Electronic commerce includes any technology that enables a company to do business electronically. According to Kamlesh. K.Bajaj[11], e-commerce refers to the paperless exchange of business information using Electronic Data Interchange, Electronic Mail, Electronic Bulletin Boards, Electronic Funds Transfer and other network based technologies helps organizations move to a fully electronic environment and change the way they operate. Minoli D and, Minoli E[12], define commerce as the interchange of goods or services, especially on a large scale. In the past, trading typically took place face to face between parties. Over the centuries and decades, trading has continued to become more sophisticated. At this time, a large percentage of transactions are no longer done face to face, but are conducted over a telephone or via mail, with the exchange of new plastic money called e-commerce.

According to OECD (Organisation for Economic Cooperation and Development) [13], e-commerce refers to all value transactions involving the transfer of information, products, services or payments via electronic networks. Later they extended the definition and included individuals, organizations, sound and visual image, to their earlier definition. Thereafter once again the definition was extended by the author and terms such as electronic trading of goods, electronic funds transfer, electronic share trading, electronic bills of lading, auctions, direct marketing and after sales services were included in the domain of e-commerce. According to the site www.usc.edu[14], e-commerce is the paperless exchange of business information using EDI, Electronic Data Interchange E-mail, Electronic Bulletin Boards, EFT (Electronic Funds Transfer) and similar

technologies. E-commerce must seek to automate the generation, processing, coordination, distribution, and reconciliation of business transactions.

According to the (Computer Credible Magazine)[15], the most common definition of e-commerce is) shopping on the Internet. You can buy almost anything via the Internet including books, appliances, flowers, groceries, and cars, to name a few. However, e-commerce has evolved to encompass more than simply shopping and now includes service-oriented activities such as home banking, buying and selling stocks, online training (distance learning), and even Internet auctions. Perhaps a more comprehensive definition of e-commerce would be) the ability to exchange money for goods or services over the Internet, or to put it more simply, Internet trading. From a business perspective, however, e-commerce is often more broadly defined as) any kind of business-related transaction conducted with the assistance of electronic tools. According to Feinman and Greenstein e-commerce is defined as the use of electronic transmission mediums (telecommunications) to engage in the exchange, including buying and selling, of products and services requiring transportation, either physically or digitally, from location to location.

The site www.polity.org.za[17], explains e-commerce as e-commerce encompasses all business conducted by means of computer networks. It reflects a paradigm shift driven by two primary factors:

- a wide range of converging technological developments and
- the emergence of the so-called "knowledge economy".

The site also characterized e-commerce as:

- an emphasis on the human mind, rather than merely physical automation.
- being information- rather than energy intensive.
- sustainability through networks, not single organizations.
- supporting distributed rather than centralised intelligence.
- requiring multiple skills and continuous learning.
- replacing lifetime employment with labour market flexibility.
- customised rather than standardised products.

- being enabled by information and communications technologies (ICTs), whilst simultaneously driving the development of new ICTs.

According to BG George Yeo[18], e-commerce is commerce conducted through electronic means over open network such as the Internet. It is a dynamic set of technologies, applications and business processes that link enterprises, consumers and communities through electronic transactions and the electronic exchange of goods, services, and information.

The site http://techunix.technion.ac.il/~orena/ec/index.html[19], explains e-commerce as, e-commerce is a general term applied to the use of computer and telecommunications technologies, particularly on an inter-enterprise basis, to support trading in goods and services, is defined as "the use of information technology to effect the linkages among the functions provided by participants in commerce". E-commerce uses a range of technologies. Some technologies such as electronic data interchange (EDI), electronic mail (e-mail), electronic funds transfer (EFT), are already in wide use. Some of them (e.g. electronic data interchange - EDI), will require agreement between trading partners (buyers and suppliers) in order to govern their electronic trading relationship.

According to the site www.mit-gov-in[20], while there is no single globally accepted definition of E-Commerce, it is gradually leaning towards "goods and services transacted over Internet". More accepted definition could be the one accepted in the WTO Ministerial Declaration on E-Commerce "the production, distribution, marketing, sales or delivery of goods and services by electronic means". According to site www.ngage.net[21], e-commerce as means online shopping - workaholics ordering a last minute gift online because they forgot someone's birthday again. But Internet shopping is only a small part of the e-commerce picture. E-commerce solutions bring the open standards and universal access of the Internet to the core business processes of buying and selling goods and services. More than a transaction or exchange of payment, e-commerce also helps you generate demand for products or services, and improves your fulfillment, order management, payment and ongoing support functions. It can cut expenses by reducing transaction costs and streamlining business processes. With the worldwide reach of the

Internet, an e-commerce solution can help you discover new markets while increasing your speed to market. E-commerce includes:

- Electronic presentation of goods and services
- Online order taking and bill presentation
- Automated customer account inquiries
- Online payment and transaction handling
- Business to business or automated supply chain management (SCM) solutions

www.ispo.be/ecommerce/aboustus.html[22], explains -commerce as "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact".

Wigand, Rolf T[23], explains e-commerce denotes the seamless application of information and communication technology from its point of origin to its end point along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal.

Jan, W.P.F, Kardaun[24], explains e-commerce as e-commerce is commerce that is dependent upon digital communication. Further he extended definition commerce becomes e-commerce when Internet (or a similar net) has played a crucial role in one or more of the phases of orientation, purchase, delivery or after-sales. According to Thomas L. Mesenbourg[25], the meaning of e-commerce is

- An individual purchases a book on the Internet.
- A government employee reserves a hotel room over the Internet.
- A business calls a toll free number and orders a computer using the seller's interactive telephone system.
- A business buys office supplies on-line or through an electronic auction.
- A retailer orders merchandise using an EDI network or a supplier's extranet.
- A manufacturing plant orders electronic components from another plant within the company using the company's intranet.

- An individual withdraws funds from an automatic teller machine (ATM).

Identifying e-commerce transactions often is not as straight forward as the previous examples may make it appear. Some additional examples that demonstrate the complexity of implementing the proposed definition are provided below.

- A consumer visits a bookstore and inquires about the availability of an out-of-stock book. A bookstore employee downloads a digital copy of the book and prints it along with cover. Not an e-commerce retail transaction since agreement to purchase did not occur over an electronic network. However, the right to access the digital archived copy is an e-commerce service transaction.
- *Consumer uses Internet to research the purchase of a computer, but calls a toll* free number and places the order with an operator. Not an e-commerce transaction because agreement to transfer ownership did not occur over computer-mediated network; neither telephone was computer-enabled.

An individual visits retail store and purchases merchandise not currently in stock from a computer-enabled kiosk located inside the shop. An e-commerce transaction since agreement occurred over computer-mediated networks. In contrast, the purchase of a pre-packaged music CD from a computerized kiosk would not be considered an e-commerce transaction. If the kiosk was network linked, the digital music was downloaded, and the CD was mastered within the kiosk this would be an e-commerce transaction.

According to Vasja Vehovar [26]:

a) E-commerce is a commercial activity conducted over electronic networks, often over the Internet, which leads to the purchase or the sale of goods or services (EITO, 1999)

b) By e-commerce we understand any transmission of business documents (such as payments, orders, and certificates) over computer networks. (RIS, 1999).

According to www.oecd.org[27] e-commerce not only includes actual transaction between buyer and seller but also upstream and downstream activities that made the transaction possible. In other words every activity that facilitates the trade is called e-commerce.

1.2 Brief History of Electronic Commerce

In short history of electronic commerce may be recorded into following stages.

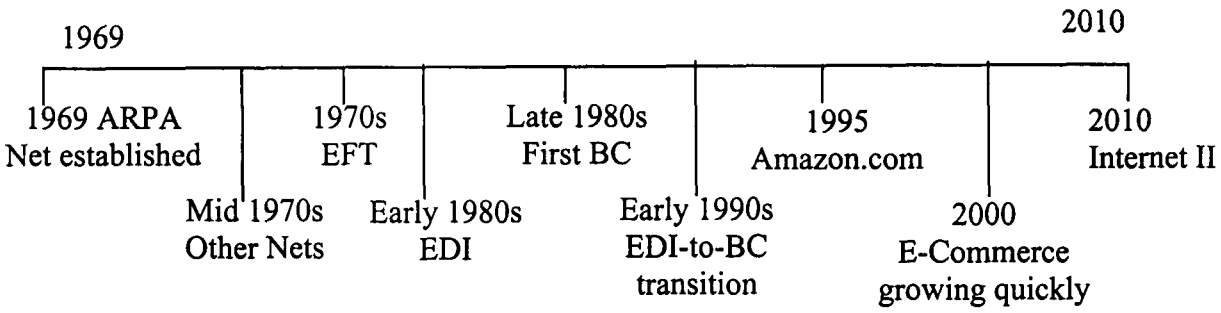
STAGE I

Electronic commerce[28] is a fairly recent mode of conducting commerce. Its history can be traced back to the birth of the internet in the 1960s, the US department of defense became very concerned about the possible effects of nuclear attacks on its computing facilities. The defense department realized that the weapons of the future would require powerful computers for coordination and control. The powerful computers of that time were all large mainframe computers, so the defense department began examing ways to connect these computers to each other and also to weapons installations that were distributed all over the control. The defense department agency charged with the task hired many of the best communications technology researchers, and for many years funded research at leading universities and institutions to exposed the task of creating a worldwide networks that could remain operational even if parts of the networks were destroyed by enemy military action or sabotage. These researchers worked hard to dense ways to build networks that could operate independently that is networks that would not require a central computer to control network operations. The worlds telephone companies were the early models for networked computers.

STAGE II

U.S. department[29] of defense and other organizations and individuals working on defense related research projects. The Internet was built to solve the key problem of communications between computers that mine thousands of miles a part but needed to work together. The department of defence eventually opened its networks to educational institutions and then to commercial users.

Fig 1.1: Showing History of Electronic Commerce



In 1969, the US department of defence established the advanced research projects networks (ARPANET). ARPANET was the first really viable inter-organizational network or Internet. In the 1970s, other networks such as Bitnet and Usenet sprang up as the technology become more public.

STAGE III

During[30] the 1970s, the introduction of electronic funds transfer (EFT) between banks over secure private networks changed financial markets. Electronic funds transfer optimizes electronic payments with electronically provided remittance information. Today there are many EFT variants, including the debit card whose use is becoming ubiquitous at points of sales (POS) in grocery stores and retail outlets, and direct deposits to employee bank accounts.

STAGE IV

In 1972, a researcher[31] wrote a programme that could send and receive message over the networks, E-mail had been born and became widely used very quickly.

STAGE V

During[32] the tale 1970s and early 1980s electronic commerce became wide spread within companies in the form of electronic messaging technology: electronic data interchange (EDI) and electronic mail. Electronic messaging technology streamline business processes by reducing paper work and increasing automation. Business exchanges traditionally conducted with paper such as checks, purchase orders and shipping documents, are conducted electronically. Electronic data interchange allows companies to send/ receive business documents (such as purchase orders) in a standardized electronic form to /from their suppliers. For example, combined with just in time (JIT)

manufacturing, EDI enables suppliers to deliver parts directly to the factory floor, resulting in savings in inventory, wave housing, and handling costs. Electronic mail does much the same for unstructured organizational communications both inside and across the organizational boundaries. Over the years, EDI has evolved into several different technologies called network enabled business practices.

- Technical Data interchange (engineering)
- Mass customization (demand-driven manufacturing)
- Virtual and team based enterprises.
- Outsourcing and coordination of logistics.
- Desktop video conferencing.
- Document workflow systems
- Electronic mail, (Communication)
- Electronic data interchange (procurement)

In the late 1980s and early 1990s electronic messaging technologies became an integral part of workflow or collaborative computing systems (also called groupware).

A prominent example of such system is Lotus Notes groupware focused primarily on taking existing non-electronic methods and grafting them onto an electronic platform for improved business process efficiency. Although hyped as the "Killer app" in the early 1990s groupware efforts resulted in small gains in productivity and efficiency.

In the mid-1980s, a completely different type of electronic commerce technology spread among consumers in the form of online services that provided a new form of online services that provided a new form of social interaction (such as chat rooms and inter-relay chat [IRC]) and knowledge sharing (such as news groups and File Transfer Programs). Social interaction created a sense of virtual community among the cyberspace inhabitants and helped give rise to the concept of a "global village. " At the same time, information access and exchange have become more affordable. By world at ever-decreasing costs. Despite the presence of these networks, the one key ingredient missing until recently was utility and ease of use.

In the 1990s, the advent of the World Wide Web on the Internet represents a turning point in electronic commerce by providing an easy – to – use technology solution to the problem of information publishing and dissemination. The Web made electronic

commerce a cheaper way of doing business and enabled more diverse business activities. The Web also enabled small business to complete on a more equal technological footing with resource rich multinational companies to keep up with upstarts who can enter the new marketplace of several million customers with a minimal infrastructure investment: a PC, a modem, and an internet account. These new economies are forcing traditional companies to reconceptualize cost structure in order to remain competitive. Among the first entrepreneurs are Amazon and Yahoo.

How fast has Internet grown can be seen from the fact that radio[33] took 38 years to reach 50 million users, personal computers took 16 years to reach 50 million users, TV took 13 years to reach 50 million users, Internet took 4 years to reach 50 million users.

1.3 Three Pillars of Electronic Commerce[34]

Electronic Commerce is said to rest on three pillars and they are:

- Electronic Information
- Electronic Relationships
- Electronic Transactions

Another electronic business model that builds on traditional market spaces in the three pillars of electronic commerce model is the existing market space. Three electronic pillars support open market processes: electronic information, electronic relationships, and electronic tractions.

The first pillar, **Electronic Information**, is similar to Angehrn's virtual information space. The www is viewed as a "global repository" of documents and multimedia data. Constructing an electronic pillar is easy: most word processing software packages will be easily convent documents into web-readable format. The challenge is to construct a good solid pillar that will not crumble, or in www terms, the web page does not freeze up or links do not lead the visitor to a dead-end or having them wandering though a maze of links without easily finding the necessary information. Thus, the fashion, or it will not adequately support the objective of an open market. The retrieval of the desired electronic information is the cause of frustration to many web "surfers". Search engines and other intelligent agents are increasing in popularity to assist users too more efficiently and effectively navigate the www.

The second pillar of, **Electronic Relationship**, is the central pillar, and is similar to Angehrn's virtual communication space. The saying "If you build it, they will come" does not apply to web site based electronic commerce. Placing information on products and service offerings on a website does not mean that a user will return to the site. The electronic relationships pillar is about building a site that has the feeling of being a "port of entry" into a community. Having entrants pass through this port of entry on a somewhat regular basis is the key to successfully engaging in electronic commerce.

In order to attract users over and again to a site (which also means away from others sites), the site needs to have certain features it must:

- Be innovative
- Add value

- Provide information and interaction not otherwise available; and
- Create forums for opinion-building activities.

The third pillar is the **Electronic Transaction** pillar. This is similar to Angehrn's virtual transaction space, and also encompasses Angehrn's virtual distribution space. May business have built an electronic information pillar and one has build or are building an electronic community pillar, but substantially fewer have constructed the electronic transaction pillar. Two impediments to constructing the pillar exist: the ability to engage in meaningful and sufficient negotiation processes and security of transaction data.

1.4 Benefits of Electronic Commerce

Electronic commerce has recently been a very active field of study. A large number people and organizations are betting that the electronic marketplace of the future will be immense and want to gain as a large a share of it as possible.

Electronic Commerce has a number of potential benefits, which have been summarised below:

1.4. i Lower Purchasing Costs[35]

Buying materials or services for a corporation can be a complex, multi-step process. First, purchasers have to find suppliers who make the product and determine whether they meet volume, delivery, quality and price requirements. Once a potential supplier has been chosen, detailed drawings and information are transmitted to the supplier so that the product is built to exact customer specifications. Assuming the product sample has been approved and the supplier's manufacturing lines are ready for production, the buyer then transmits a purchase order (P.O.) for a specific quantity of goods. The buyer, meanwhile, receives notification from the supplier that the P.O. was received and confirmation that the order can be met. When the product ships from the supplier, the buyer again receives notification, along with an invoice for goods delivered. The buyer's accounting department matches the invoice with the P.O. and pays the invoice. When changes to the normal order happen—a frequent occurrence in most companies—the process can be much more complicated. Companies lower procurement costs by consolidating purchases and developing relationships with key suppliers to benefit from volume discounts and tighter integration in the manufacturing process. They also cast a wide net for lower-cost sources of supply. Large companies have been using EDI over private networks to reduce labor, printing and mailing costs in the procurement process. Automating routine procurement means the procurement staff has more time to focus on negotiating better prices and building supplier relationships. Analysts estimate that businesses already trade well over $150 billion in goods and services using EDI over VANs.41 Companies using EDI commonly save 5-10 percent in procurement costs The Internet has the potential to further reduce procurement costs. Large companies benefit from lower transmission costs versus private networks. The Internet also opens the door to doing business electronically with new suppliers and with small and

medium-sized suppliers who formerly communicated only via fax or phone. Small companies also benefit.

1.4. ii Reduced Inventory/The Right Products in Stock

The longer it takes for production schedules to reach suppliers, the more inventory a company has to hold to account for delays and errors, and the less quickly it can react to changes in demand. The more inventory a company holds, the higher its operating costs, and the lower its profits. Carrying more inventories does not ensure better customer service, either. Shelves weighed down with size-10 running shoes do not help the customer who wears a size 8. When a customer enters a furniture showroom looking for an armchair with green and white stripes and is told it's on back-order for 12 weeks, he may drive across town to a competitor rather than wait. Managing inventory properly results in better service for the customer and lower operating costs for the company. Increasing the frequency of inventory "turns" (the number of times inventory in existing warehouse or store space is sold or used for production each year) reduces inventory-related interest, handling and storage costs. Reducing inventory levels also means that existing manufacturing capacity is more efficiently utilized. More efficient production can reduce or eliminate the need for additional investments in plant and equipment.

1.4. iii Lower Cycle Times

Cycle time is the total time it takes to build a product. There are certain fixed costs associated with building any product that do not vary with the amount of production, but rather are time dependent. These "fixed" costs include depreciation of equipment, most utility and building costs, and most managerial and supervisory time. If the time to build a product can be reduced to seven days instead of ten, then the fixed costs per product are lower since less time was needed. Electronic commerce allows "cycle times" to be shortened, allowing more to be produced for the same or lower costs.

1.4. iv More Efficient and Effective Customer Service

Companies are beginning to use the Internet for customer service. Having product descriptions, technical support and order status information online not only saves money by freeing up a company's own customer service staff to handle more complicated questions and manage customer relations, it can also lead to more satisfied customers.

1.4. v Lower Sales and Marketing Costs

An individual sales person can support as many customer accounts as he can physically visit or contact by telephone. Therefore, as the number of accounts increases, so does the size of the sales force. Even direct marketing companies increase staffing as telephone order volume increases. By contrast, a Web business can add new customers with little or no additional cost. Because its sales function is housed in a computer server rather than physical store locations or sales people, its reach is bounded only by the capacity of the servers to respond to inquiries and orders. The Internet can also make traditional sales organizations, layered distribution channels, catalog sales and advertising more efficient. With automated ordering capabilities, sales representatives no longer have to prepare time-consuming manual orders. Instead, they can spend time building and maintaining customer relationships. Electronic catalogs present far more information and options than their paper counterparts. Direct marketing online can shorten repurchase cycles and increase the ability to sell additional items. Some recent business examples suggest the potential of the Internet as an efficient sales tool.

1.4. vi New Sales Opportunities

The Internet operates around the clock and around the world. As a result, businesses on the Web can reach new markets they could not reach effectively with an in-person sales force or advertising campaigns.

For instance, a plastics commodity specialist at a large manufacturer can sit down at his PC, click on a Web browser and search for suppliers selling industrial plastics online. A small supplier with a limited sales force can now reach that buyer, getting its first introduction online. Similarly, a vendor's sales force may not be able to reach the millions of home offices and small offices around the country. By having an online presence and creating customized services for the small business market, that vendor may develop a new, lucrative market, both within the U.S. and globally.

1.4. vii Consumer Benefits[36]

1.4.vii.a Access to More Information :One important consumer benefit associated with marketing on the Web is the access to greater amounts of dynamic information to support queries for consumer decision making.

1.4.vii.b Easier Market Research and Comparison: The ability of the Web to amass, analyze, and control large quantities of specialized data can enable comparison-shopping and speed the process of finding items. The Web facilitates trial and provides instant gratification; customers can test products online which may stimulate purchase. There is also the potential of wider availability of hard-to-find products and wider selection of items due to the width and efficiency of the channel.

1.4.vii.c Lower Costs & Prices Increased competition in procurement, as more suppliers are able to compete in an electronically open marketplace cause a greater competition, which naturally lowers prices and costs. This increase in competition, leads to better quality and variety of goods through expanded markets and the ability to produce customized goods.

1.4.viii Benefits to the Firm

1.4.v.iii.a Better Distribution-Firm benefits arise partly from the use of the Web as a distribution channel. First, the Web potentially offers certain classes of providers participation in a market in which distribution costs or cost-of-sales shrink to zero. This is most likely for firms in publishing, information services or digital product categories. For example, digital products can be delivered immediately; hence such businesses may encounter massive disintermediation or even the eventual elimination of middleman. Moreover buyers and sellers can access and contact each other directly, potentially eliminating some of the marketing cost and constraints imposed by such interactions in the terrestrial world. This may also have the effect of shrinking the channel and making distribution much more efficient (mainly due to reduced overhead costs through such outcomes as uniformity, automation, and large-scale integration of management processes). Time to complete business transaction may be reduced as well, translating into additional efficiencies for the firm. However, such potential efficiencies must be tempered with market realities.

Businesses on the Web transfer more of the selling function to the customer, through online ordering and the use of full-out forms, thus helping to bring transactions to a conclusion. This permits a third benefit in the form of capture of customer information. The technology offers the firm the opportunity to gather market

intelligence and monitor consumer choices through customers' revealed preferences in navigational and purchasing behavior in the Web.

1.4.viii.b Marketing Communications -At the present time, most firms use the Web to deliver information about the firm and its offerings for both internal communications with other firms and consumers. The interactive nature of the medium offers another category of firm benefits since it is especially conducive to developing customer relationships. This potential for customer interaction, which is largely asynchronous under current implementations, facilitates relationship marketing and customer support to a greater degree than ever before possible with traditional media.

Web sites are available on demand to consumers 24 hours a day. Marketers to hold the attention of the consumer by engaging the consumer in an asynchronous "dialogue" that occurs at both parties' convenience can use the interactive nature of the medium. This capability of the medium offers unprecedented opportunities to tailor communications precisely to individual customers, allowing individual consumers to request as much information as desired. Further, it allows the marketer to obtain relevant information from customers for the purpose of serving them more effectively in the future.

The simplest implementations involve engaging customers through the use of E-mail buttons located strategically on the site. More sophisticated implementations may involve fill-out forms and other incentives designed to engage customers in ongoing relationships with the firm. The objective of such continuous relationship building is dual-pronged: to give consumers information about the firm and its offers and to receive information from consumers about their needs with respect to such offerings. Hence, effective customized advertising, promotion and customer service is the other benefit.

1.4.ix Operational Benefits- Operational benefits of Web use for industrial sellers are reduced errors, time, and overhead costs in information processing; reduced costs to suppliers by electronically accessing on-line databases of bid opportunities, online abilities to submit bids, and online review of awards. In addition, creation of new markets and segments, increased generation of sales leads, easier entry into new markets (especially geographically remote markets) and faster time to market is

facilitated. This is due to the ability to reach potential customers easily and cheaply and eliminate delays between the different steps of the business subprocesses.

1.4.x Supplier Opportunities and Customer Benefits[36]

1.4.x. a Global Presence / Global Choice The boundaries of electronic commerce are not defined by geography or national borders, but rather by the coverage of computer networks. Since the most important networks are global in scope, electronic commerce enables even the smallest suppliers to achieve a global presence and to conduct business world-wide.

The corresponding customer benefit is global choice - a customer can select from all potential suppliers of a required product or service, regardless of their geographical location.

1.4.x. b Improved Competitiveness / Quality of Service- Electronic commerce enables suppliers to improve competitiveness by becoming "closer to the customer". As a simple example, many companies are employing electronic commerce technology to offer improved levels of pre-and post-sales support, with increased levels of product information, guidance on product use, and rapid response to customer enquiries. The corresponding customer benefit is improved quality of service.

1.4.x. c Mass Customisation / Personalised Products and Services- With electronic interaction, customers are able to gather detailed information on the needs of each individual customer and automatically tailor products and services to those individual needs. This results in customised products comparable to those offered by specialised suppliers but at mass market prices. One simple example is an on-line magazine that is tailored for the individual reader on each access to emphasise articles likely to be of interest and exclude articles that have already been read.

1.4.x. d Shorten or Eradicate Supply Chains / Rapid Response to Needs Electronic Commerce often allows traditional supply chains to be shortened dramatically. There are many established examples where goods are shipped directly from the manufacturer to the end consumer, by-passing the traditional staging posts of wholesaler's warehouse, retailer's warehouse and retail outlet. (Typically the contribution of electronic commerce is not in making such direct distribution feasible

since it could also be achieved using paper catalogues and telephone or postal ordering but rather in making it practical in terms of both cost and time delays.)

The extreme example arises in the case of products and services that can be delivered electronically, when the supply chain can be eradicated entirely. This has massive implications for the entertainment industries (film, video, music, magazines, newspapers), for the information and "edutainment" industries (including all forms of publishing), and for companies concerned with the development and distribution of computer software.

The corresponding customer benefit is the ability to rapidly obtain the precise product that is required, without being limited to those currently in stock at local suppliers.

1.4.x.e Substantial Cost Savings / Substantial Price Reductions -One of the major contributions of electronic commerce is a reduction in transaction costs. While the cost of a business transaction that entails human interaction might be measured in dollars, the cost of conducting a similar transaction electronically might be a few cents or less. Hence, any business process involving "routine" interactions between people offers the potential for substantial cost savings, which can in turn be translated into substantial price reductions for customers.

1.4.x.f Novel Business Opportunities / New Products and Services -In addition to re-defining the markets for existing products and services, electronic commerce also provides the opportunity for entirely new products and services. Examples include network supply and support services, directory services, contact services (i.e. establishing initial contact between potential customers and potential suppliers), and many kinds of on-line information services.

While these various opportunities and benefits are all distinct, they are to some extent inter-related. For example, improvements in competitiveness and quality of service may in part be derived from mass customisation, while shortening of supply chains may contribute to cost savings and price reductions.

1.4.xi Other Opportunities and Benefits

Fig 1.2: Showing Opportunity and Benefits

Supplier Opportunity	Customer Benefit
Global Presence	Global Choice
Improved Competitiveness	Quality of Service
Mass Customisation & Customerisation	Personalised Products & ervices
Shorten or Eradicate Supply Chains	Rapid Response to Needs
Substantial Cost Savings	Substantial Price Reductions
Novel Business Opportunities	New Products & Services

Benefits to Sellers[38]

- Cheap global marketing for products using the means of multimedia.
- The potential for virtual corporations without real stores.
- Relatively small investments make the markets easily penetrable by so called microcorporations.
- Catalogs and other available information can be kept up to date.
- Customer service can be enhanced with email. Easy and responsive communication won't require as many clerks.
- Commerce can be fast and easy and will not be tied to time or place.

Benefits to Buyers

All of the advantages the seller has are also advantages to the buyer. A lighter sales channel can lower prices at the same time it raises the quality of customer service.

- Purchases can be made anywhere with a computer and a network connection.
- The sellers can modify their supply faster to real demand due to easier feedback from the customers through email.
- The roles of the manufacturers and sellers can be redistributed. Support will come from a party that is most capable of doing it. A network-savvy

manufacturer will probably support customers directly. An advanced retailer might on the other hand purchase the support from a third party.

- Communication through Usenet News and mailing lists has already created an independent source of information on products from other users.

Benefits to Other Parties

- Manufacturers want to have their goods on sale at as many points of sale as possible.
- Distributors may think of the new marketplace as a way to differentiate their services from those of their competitors.
- Banks feel that the new methods will increase the amount of financial transactions and the need for financing.
- Computer and software industry will have another field to sell their products and services.

Beyond all these tangible and intangible benefits there are other benefits that will result from its deployment.

1.5 Barriers and Risks of Electronic Commerce

1.5 A Barriers of Electronic Commerce
1.5 B Seven Deadly Sins of Electronic Commerce
1.5 C Party in Risks

If e-commerce is so hot, why it has still not made major impact? There are many reasons:

1.5.A. According to the site www.oecd.org[39] the following are the barriers of e-commerce

1.5.A.i Access to and Use of Infrastructure: Before users can engage in on-line commercial transactions, they must be able to access and use the network infrastructure. This includes access to information technologies such as computers, servers and software, as well as to the network itself, which is composed of a number of different infrastructures: fixed-line communications, cable TV, cellular mobile networks, satellites, broadcasting networks and even electricity distribution networks. The constant and rapid decline in prices and improved information technologies have promoted their widespread diffusion.

1.5.A.ii. Infrastructure Capacity: Regulatory structures provide the market framework and incentives or disincentives to expand infrastructure capacity. At present, most households or business customers are connected to communication networks via a pair of copper wires, called the local loop, which is part of the public switched telecommunication network (PSTN). The speed of local loops and related total network capacity is likely to play a crucial role in how fast electronic commerce applications develop, diffuse through the economy, and are accepted by the public. This is because sophisticated electronic commerce applications will need to rely on relatively high-speed, high-bandwidth data transfers of sufficient quality for services, the development of that bandwidth largely depends on the existence of sufficient competition in the communications market.

1.5.A.iii. Network Convergence: As forms of communication become increasingly digital, allowing the development and integration of generic networks able to provide and support all types of applications, including entertainment, voice telephony, and electronic commerce will be key to expanding network capacity. Such convergence will be fundamental in shifting from regulatory structures and regulations that are specific to

broadcasting and telecommunication markets and towards frameworks that emphasise open access to networks for all services. Network and service providers would then be subject to fewer regulatory restrictions than at present.

1.5.A.iv. The Local Loop: Local telephone tariffs currently account for more than 60 per cent of the average total cost of Internet access across infrastructure competition that puts pressure on prices and encourages innovation in pricing will largely depend on allowing competition between different network technologies to stimulate local loop competition. This will ensure that users and service providers have a choice in how they access electronic commerce applications or obtain access to their customers. However, incumbent operators have significant market power because of their near universal access to households and to most businesses. Regulatory safeguards are therefore necessary to ensure that new entrants face a level playing field as they develop their infrastructure and build their customer base.

1.5.A.v. The Domain Name System Needs to Evolve: The need for competition is apparent not only as the traditional communications networks are adapted to new conditions but also as new infrastructures are developed to serve a growing information society. The domain name system (DNS) is a case in point. It generates the root of Internet addresses (e.g. *.be* for Belgium or one of the generic top-level domains such as *.com*, *.org*, *.net*) for Internet hosts and is a crucial component of the Internet routing system.

1.5.A.vi. Building User and Consumer Trust: Trust is central to any commercial transaction. Typically, it is generated through relationships between transacting parties, familiarity with procedures, or redress mechanisms. Developing new kinds of commercial activities in the electronic environment largely hinges on assuring consumers and businesses that their use of network services is secure and reliable, that their transactions are safe, and that they will be able to verify important information about transactions and transacting parties, such as origin, receipt and integrity of information; and identification of parties dealt with. Furthermore, consumers want to have control over the collection and use of their personal data and to have appropriate redress mechanisms available in the event of a problem.

1.5.A.vii. Security and Authentication: The importance of information systems for society and the global economy is intensifying as the value and quantity of data transmitted and stored on those systems increases. At the same time, systems and data are increasingly vulnerable to unauthorised access and use, misappropriation, alteration, and destruction. Proliferation of computers increased computing power, interconnectivity, decentralisation, growth of networks and numbers of users, as well as the convergence of information and communications technologies both enhance the utility of these systems and increase their vulnerability.

1.5.A.viii. Certification: Secure technologies, most notably cryptography, and a predictable regulatory environment to support them will form the basis for building business and consumer trust in electronic transactions. Digital signatures, electronic signatures, and electronic representations that link individuals and entities to operations in the electronic environment are less meaningful without accompanying certification mechanisms -- means of independently verifying information about transactions and transacting parties. Like the physical world, the electronic world needs means of its own for certifying information. A certification authority (CA) can act as an independent trusted means of determining that factual information is verifiably connected to a transacting party. It could certify at least six types of information to provide a basis for confidence in electronic transactions: identification and registration, user attributes, compliance with standards, authorisation to act, transactional information, or applicable laws. Different kinds of transactions may require different levels of certification, and all transactions may not require verification of all kinds of information.

1.5.A.ix. Protection of Privacy and Personal Data: One of the hallmarks of electronic commerce is that, by drastically reducing transaction and search costs, it reduces the distance between buyer and seller, enabling businesses to target very small niches, develop individual customer profiles, and essentially provide a means of marketing on a one-to-one basis. The ability to realise this goal will largely hinge on the climate of confidence businesses are able to create in their relations with consumers. Assurances about protection of consumer privacy and personal data play an important role in building that confidence. Consumers want to know -- and have some control over -- the personal data or information on their on-line activities and electronic transactions that are collected

and how they are used. They have become more aware of and concerned about the ease with which data about them can be generated, compiled, accessed, processed, compared, linked, stored and used. Consumers may see the compilation of such statistical profiles as a threatening invasion of privacy, and this may retard the development of electronic commerce. However, trends in traditional commerce, such as participation in fidelity or loyalty shopping plans and the increasing use of payment methods that leave an electronic trail, suggest that consumers may either be ignorant of their erosion of privacy or willing to exchange some privacy for something they value (e.g. lower prices, convenience, personalisation). E-commerce could greatly facilitate this exchange, but informed consent by consumers is essential to its realisation.

1.5.A.x. Consumer Protection: Electronic commerce has many qualities that consumers find attractive: variety, convenience, personalisation and sometimes-lower prices. It also has properties that facilitate fraud and make prosecution difficult. In addition, its international nature means that the laws and regulations a consumer relies on for protection at home may not apply in the merchant's country. Indeed, even determining jurisdiction may be a problem. Novel redress mechanisms may be needed to reverse problem transactions and give merchants incentives to ensure customer satisfaction.

1.5.A.xi. Minimising Regulatory Uncertainty: Associated with the issue of trust is general uncertainty about how existing regulatory frameworks will be applied or updated, and new regulations drafted, for this new realm. Both businesses and individuals want to know the expected consequences of on-line activities, and government action is one way to respond. Policy papers, such as those produced by Australia, the European Commission, Japan, and the United States, help to promote a predictable regulatory and legal environment by providing guiding principles that government and other bodies abide by. However, electronic commerce is inherently international, and in order to establish a consistent regulatory environment, some consensus must be found at international level. Some of the key problems in this regard are customs and taxation, intellectual property issues, and the updating of commercial codes, in particular those dealing with issues of liability and jurisdiction.

1.5.A.xii.Taxation: Assessment and collection of taxes on e-commerce transactions are an issue that concerns both government and business. Governments are concerned about

the potential loss of revenue and businesses are concerned about the possible impacts of government regulation. In the physical world, collecting taxes is a challenge that, by and large, governments have met. They will probably be equally successful in the "virtual" world insofar as countries interpret and apply existing rules in an internationally consistent fashion. If they succeed in this, they will not need to create new taxes specifically for electronic commerce. The potential for mistrust and uncertainty can be avoided if countries work together to develop a tax framework that protects the tax base but avoids hindering the development of electronic commerce.

1.5.A.xiii. Updating of Commercial Codes: Most rules and regulations for conducting business address a world of paper, physical products, and retailing within national borders. Electronic commerce calls for an evaluation and updating of the commercial codes that govern business transactions. Until these codes incorporate the digital world, e-commerce will be hampered. The situation is complicated by the inconsistency of codes among countries, many of which are a reflection of cultural norms. International harmonisation of these laws will require drafting a model law for commercial practices at international level, which can serve as a common framework. At a minimum, it should address issues such as the legal recognition of electronic signatures; acceptance of electronic documents for paper filing requirements; the formation, validity and enforcement of contracts; the harmonisation of rules that govern commercial communications (e.g. advertising, direct marketing) and commercial pricing practices (e.g. sales, coupons). Responsibilities need to be clarified across the chain of liability that extends from consumers to network access and service providers, software developers, intermediaries such as certification authorities and e-payment providers, and finally, the electronic commerce merchants themselves.

1.5.A.xiv. -Easing logistical problems: The growth of electronic commerce and its potential economic impact could be limited by a number of logistical problems relating to two necessary elements of any commercial transaction: payment and delivery. For electronic commerce to thrive secure and simple electronic payment systems must be in place. Furthermore, efficient and low-cost distribution channels are needed, both for physical delivery of goods ordered electronically and, as discussed under the section on

"access", for timely delivery of digital goods and services over crowded information networks.

1.5.A.xv. Paying Electronically: Wrapped up with issues of information infrastructure, user trust and confidence, and a predictable regulatory environment are the fundamental logistical problem of paying for electronic commerce transactions. Depending on the business model assumed, the problem is either Herculean, requiring a completely new system, or no problem at all, as existing methods of payment suffice.

1.5.A.xvi. The Delivery of Physical Goods: One barrier to electronic commerce is the fact that while on-line transactions are convenient, the immediate off-line delivery of goods is often costly and inefficient. The high cost and inconvenience of international parcel delivery are sufficient to limit the growth of international electronic commerce to luxury goods. Moreover, a recent survey of on-line shoppers by a market research company found that their most important criterion is timely delivery of goods. Of those polled, ". 96 per cent said that if their goods arrive on time they are likely to buy again from the same merchant, and repeat customers on average spend more than 50 per cent more than first time buyers". Two major barriers stand in the way of the inexpensive, convenient, and timely delivery of parcel packages: parcel delivery and customs clearance.

1.5.B According to David Geller[40] the seven deadly sins of e-commerce

1.5.B.i: Over-Engineering

A common mistake is to attempt to develop a site that turns out to be too complex to ever be implemented. Often, well-intentioned projects never get off the ground due to unrealistic and convoluted plans. In many cases, the challenges created by new and unfamiliar technologies may be too great to overcome initially, and the new online store can be greatly delayed or abandoned altogether, as technical costs mount. To avoid over-engineering your online store, start simply by identifying the most basic goals of your online store and first implement those. When the basic system is in place, you can always add on all the bells and whistles.

1.5.B.ii: Biting off More Than You Can Chew

E-commerce can involve a highly complex combination of equipment choices, website building and hosting issues, as well as security and billing technologies, and the list goes on, it is easy to attempt to resolve all these issues when setting up shop, but the smarter strategy may be different. Instead of bitting off more than anyone can chew, choose hosting services that provide turnkey solutions. In this way, you can concentrate on selling you product while delegating much of the technical chores to others.

1.5.B.iii: Forcing a Square PEG into a Round Hole

It is not to sell many of the products over the Internet because of factors like high shipping costs, high product liability issues, or the need for personal salesmanship. Before opening your online store to the public, evaluate you products suitability for online sales. Ask yourself some questions like:

...Would your prices entice shoppers to purchase your product... online rather than from retail stores?

...How costly will the shipping and handling be?

...Will the consumer trust your online service guarantees?

An objective assessment of your shares of success online can save you much time and expenses in the long run.

1.5.B.iv: Neglecting Security Issues

Network security should be a top priority when hosting an e-commerce site even before it goes live. Computer network experts are probably already aware of the pressing need to install the Windows NT service pack and of the dangers of leaving the packaged ogi scripts in place.

If you are an intermediate user, you should seriously consider retaining the services of a network security consultant as well as installing specialized security software, If you are a beginner you should probably let an experienced hosting service take care of security issues.

1.5.B.v: "Going It" Alone

E-commerce pioneers generally share an innovative and entrepreneurial spirit, which may well, be the underlying secret of their success. However, when considering the vast complexity of e-commerce issues, it would be a mistake not to outsource some of the e-

commerce setup tasks, as needed. In many cases, even when using a turnkey hosting service lie Yahoo! Store or Geo Shops, many new e-commerce stores never succeed due to a lack of professional design and marketing know-how. Consider retaining an e-commerce oriented Web development agency. Don't go it alone, if you have the option of having professional, experienced backup.

1.5.B.vi: Design Faux Pas

To run an online store, sophisticated technologies are installed on the host Web server, or as it is often termed, the "back-end". However ultimately, the prospective online shopper only sees the "front-end", i.e., what is displayed in the shopper's Web browser. For this reason, a well - designed interface is needed.

Without a professional, marketing oriented and easy-to-use page layout, even the most sophisticated back-end technologies will be of no use in deriving sales. Likewise, cluttered Web pages that make it difficult to navigate your site, or make it difficult for the shopper to know how to place an order, can cause an online store to fail. If you are serious about building a successful e-commerce site, make sure that your site works to your advantage, rather than a cause of lost sales opportunities.

1.5.B.vii: Neglecting the Telephone Number

It is a little -know fact that for many online stores the point-of-sale is not online, at all. Rather, a typical scenario might be that the shopper browses through the site, researches and compares values, but then finally places the actual purchase order over the phone. Yet, many sites fail to make a phone number available for ordering. To respond to shopper's preferences a phone number should be listed prominently on every page of the site.

1.5.C Party Risks - According to the site www. Wgains.com[41] the growth of the Internet as a medium for all types of commerce is by now well documented. Consumer products ranging from books and jewelry to furniture and cars are all being sold via Internet. Time-sensitive financial services like stock trading are fast becoming ubiquitous. Business-to-business commerce on the Web ranges from the sale of office supplies to computers and much more. Risk management science divides this topic into

two related areas: First Party risks to property or business interruption and Third Party risks of a liability nature.

1.5.C.i - First Party exposures, otherwise described as direct loss and loss of use of information technology assets, can be caused by an expanding list of perils including:

- Physical damage to host computer equipment and network equipment
- Breaches of security by employees, former employees or contract professionals
- Breaches of security by outsiders (hackers)
- Destruction of information technology assets by employees, former employees or contract employees
- Destruction of information technology assets by outsiders (hackers)
- Disruption of computer networks due to computer viruses, e.g., Melissa virus
- Destruction of credit card or other credit information from customers leading to lost sales
- Credit injury to customers whose credit card numbers may be misused by unauthorized parties
- Lost E-Commerce revenues due to technological disruption (including telephone, data or internet service disruption on or off premises), particularly for time-sensitive industries like on-line brokerage firms
- Lost E-Commerce advertising revenues due to website disruption
- Disruption of E-Commerce due to "smurf" or "spam" attacks or incidents
- Lost new E-Commerce customers due to various forms of disruption
- Non-repudiation for various forms of disruption of time-sensitive E-Commerce
- Theft of intellectual property, trade secrets and other confidential information stored on company networks
- Cost of litigating against those who have infringed on company intellectual property
- Cost to restore damaged websites or networks
- Cost to repair or upgrade security systems/firewalls security.
- Extra expenses arising out of disruptions to Intranets and Extranets

These risk exposures are difficult to quantify in terms of frequency or severity. Their quantification is difficult primarily because: (1) Most companies do not reveal losses and the extent of their economic impact; and, (2) Since E-commerce is a young industry, insurers have not gained enough experience to formulate meaningful actuarial data. However, a recent study by the CSI/FBI entitled, "Issues and Trends: 1999 CSI/FBI Computer Crime and Security Survey," indicates that 62% of the 521 companies surveyed reported one or more security breaches over the past year. While some losses may be small, undoubtedly some serious breaches occur as well.

1.5.C.ii. - Third Party Risks Companies engaged in facilitating E-Commerce, including those who sell or service software that facilitates E-Commerce, face several exposures to financial loss. Among them are third party property damage, as well as liability arising out of the failure to deliver products or services. (Risk exposures like these are not very different from those of firms that provide software and related services for applications outside of E-Commerce.)

Another group of risk exposures encompasses all types of companies engaging in E-Commerce including legal liability for:

Wrongful access by hackers to credit card numbers or credit history information of a website's customers

- Transmission of computer viruses
- Copyright, trademark, trade dress, patent infringement, piracy, plagiarism, misappropriation and other forms of intellectual property violations
- E-Commerce and web-casting related personal injury including libel and slander
- E-Commerce related advertising injury including false or misleading advertising
- Inappropriate access or control of regulated products/services such as sale of pornography to minors, sale of guns to convicted felons or sale of liquor across state lines
- Unfair blocking or screening of a website by an Internet Service Provider
- False light (public disclosure of private facts)
- Over redemption of internet coupons, contests or games of chance
- Harassment of "any and all" forms in chat rooms
- Misleading information posted in chat rooms
- Hacker access to a website with wrongful information, e.g., PairGain on Bloomberg; and failure to remove this information promptly
- Failure of hotlinks to function

These examples merely outline *some* of the apparent risks of E-Commerce, and others will become evident as the Internet and E-Commerce mature.

1.6 Views and Trust in Electronic Commerce

According to the Professor J.Barrie Thomson[42] Electronic commerce is changing the way business is being carried out. Globalisation and disappearing trade barriers means that worldwide commerce can take place without much difficulty. However, there are difficulties in deciding with whom one can trust and safely do business with. Kelman[43] identifies the new electronic business age with the inevitable deployment of smart cards, digital signatures, digital certificates, trusted third parties and other electronic equivalents to conventional commercial systems. New risks will have to be assessed and understood and trading will no longer be able to rely on conventional trust enhancing mechanisms. New players, consumers and traders will feel vulnerable until they understand the risk factors and see them under some control. Requirements and components of trust will have to be introduced to enable electronic business transactions to be fully trusted. Companies also need trust statements, good commercial policies, and plausible ethical codes backed up by professional practices that will both increase and sustain trust.

Considering trust in Electronic Commerce two differing viewpoints can be identified - customer orientated, and organisational orientated.

1.6. A The Customer Orientated View

According to Ratnasingham[44] trust increases the amount of information sharing between trading partners thus enabling relationships to develop between businesses and customers. She goes on to describe trust as an essential ingredient for electronic commerce that should create loyal satisfied customers. However, she is also concerned with the perception of risk involved in the current electronic commerce environment. In the faceless online-commercial world participants need assurance that risks are reduced to an acceptable level. This could involve objective third parties looking after the interests of consumers. Possibilities that could be considered would be using authenticated seals on web sites and trusted digital certification with web sites subscribing to and adhering to a code of operating principles. These are likely to include the distinct elements:

1.6.A.i (i) Business Practice Disclosures

Disclosing company information and stating business practices for online electronic commerce.

1.6.A.ii (ii) Transaction Integrity

The entities that are designed to maintain effective controls over customer orders to ensure they are billed and delivered as agreed.

1.6.A.iii (iii) Information Protection

Ensures that private customer information is protected, from uses unrelated to the business transactions with which they have undertaken with a particular Electronic Commerce company.

1.6.B The Organisational Orientated View

McCullagh[45] considers that trust inspires confidence, but confidence in Electronic Commerce is not yet established, as he believes that "Trust" as a concept is often misunderstood. He considers that trust relating to electronic commerce has four major components:

i. **Technology Trust**
ii. **Behavioural Trust**
iii. **Product Trust**
iv. **Legal Trust**

1.6.B.i Technology Trust

Establishing trust in technology would be likely to involve assessment and understanding of computer systems and the security mechanisms present. This may result in trusting the outcome created by the process. Technology trust involves the use of fundamental Trusted Computing Security Evaluation Criteria, which as identified by McCullagh has six requirements:

1.6.B.i-a (i) Security Policy

There must be a well-defined and explicit security policy, which is enforced by the system.

1.6.B.i-b (ii) Marking

Labelled access control, which must be associated with objects.

1.6.B.i-c (iii) Identification

Identification of individual users must be specific.

1.6.B.i-d (iv) Accountability

A reliable system able to trace actions affecting security to responsible parties, incorporating selectively kept audit information that is protected.

1.6.B.i-e (v) Assurance

Hardware and software mechanisms contained in computer systems that enforce the security requirements must have enough assurance and be capable of being independently evaluated.

1.6.B.i-f (vi) Continuous Protection

Continuous protection of trusted mechanisms must be in place to prevent tampering such as unauthorised changes.

1.6.B.ii Behavioural Trust

Different types of societies have different attitudes to trust. According to McCullagh the Chinese, French and Italians have low trust cultures, where as, the USA, UK and Japan have high trust cultures. This is likely to affect electronic commerce in several ways through: legislative mechanisms, statutory bodies or third parties, and enforcement functions that assure that information is accurate, true, and complete. Information about the performance of an electronic commerce company and its ownership will effect the establishment of trust in different societies. For example, trust in state owned organisations might be higher in China than in Italy or France. However, high trust may be placed in well-established multinationals in the USA, UK or Japan but they may not be as trusted in China, France or Italy where a strong familistic (high trust only inside family) culture exists. For successful advancement of electronic commerce in low trust countries a better understanding of their low trust culture is desirable.

1.6.B.iii Product Trust

Trust is dependent on goodwill in relation to brand loyalty where the consumer trusts the name/brand of the product and establishes an emotional trust-bond with that company or its products. McCullagh states that the brand is the trust mechanism. Where a brand establishes good positive qualities it is positively trusted, although consumer trust can soon lost if the brand is tarnished by, for example, negative publicity. The protection of the consumer in this area is usually governed by

consumer protection either in law or consumer bodies. However, when we consider the immense global network available to electronic commerce companies and the diverse country to country standards for consumer protection we can see that product trust is likely to be problematic. Establishing consumer trust is not always easy or straightforward and can be very hard to maintain.

1.6.B.iv Legal Trust

McCullagh supports the case that there will not be a sufficient amount of trust established in electronic commerce without an adequate legal framework. He further states that it is not possible to reach absolute trust on the Internet. The problem with global electronic commerce is the enactment of legislation that provides assurance. Assurance through legislation will always be questionable and what is likely to happen is a balance of established trust and enacted legislation. The latter will need to be designed so that it will encourage people to take advantage of electronic commerce both domestically and globally. However, it is unlikely that there will be legal conformity across the globe on any one issue. Therefore the reliance on information provided by web-sites for specific country legislative issues will be paramount in establishing global electronic commerce trust from the consumer's perspective.

Types of Trust

Ratnasingham[46] looks at types of trust where one form of trust leads to another form of trust also implying that there are 3 basic forms of trust:

(i) Deterrence Based Trust

This deals with the threat of punishment, which could be a stronger motivator than promises of reward. It is not entirely based on punishment but on the rewards gained from not violating trust. An example of this is the preservation of trading reputation, which has been built up, by trading partners behaving in a trustworthy manner. This links the willingness to trust to the threat of resultant consequences.

(ii) Knowledge Based Trust

A type of trust linked to how much is known about a trading partner. The trustor is able to understand and predict the behaviour of the other trading partner (the trustee). This is likely to be derived over time as a trading relationship develops and the reliability of behaviour can be predicted.

(iii) Identification Based Trust

Based on common values, this type of trust involves common tasks not on individual intimations from trading partners. This is likely to be in the form of standard processes developed over time and where one party takes on the needs and desires of others as policy, which would also include joint gains for both parties.

1.7 Types of Electronic Commerce

Electronic commerce is said to bring about paradigm of change in the world of trading and that can be classified into four basic types. (For detailed note on B2B and B2C please see Appendix-II from page number 233-243).

1.7.A -Business – Consumer
1.7.B -Business – Business
1.7.C -Business – Administration
1.7.D -Consumer – Administration

1.7.A The Business-Consumer[47] category largely equates to electronic retailing. This category has expanded greatly with the advent of the World Wide Web. There are now shopping walls all over the Internet offering all manner of consumer goods, from cakes and wine to computers and motorcars.

1.7.B The Business-Business category would be company that uses a network for ordering its suppliers, receiving invoices and making payments. This category has been established for several years, particularly using electronic data interchange (EDI) over private or value – added networks

1.7.B.i The Inter–Organizational[42] (business-business) perspective, electronic commerce facilities the following the following business application.

1.7.B.i.a Suppliers Management – Electronic applications help companies reduce the number of suppliers and facilitate business partnerships reducing purchase order (PO) Processing Costs and cycle times, and by increasing the number of PQ processed with fewer people.

1.7.B.i.b Inventory Management – Electronic applications shorten the order – ship bill cycle. If the majority of a business partners are electronically linked, information once sent by fax or mail can now be instantly transmitted businesses can also track their documents to ensure that they were received, then by improving auditing capabilities this also helps to reduce inventory levels, improve inventor turns, and eliminate out of stock occurrences.

1.7.B.i.c Distribution Management – electronic applications facilitate the transmission of shipping documents such as bills of lading, purchase orders, advance ship notices, and

manifest claims, and enable better resource management by ensuring that the documents themselves contain more accurate date.

1.7.B.i.d Channel Management – Electronic applications quickly disseminate information about changing operational conditions to trading partners. Technical, product, and pricing information that once required repeated telephone calls and countless labor hours can now be posted to electronic bulletin boards .By electronically linking production-related information with international distributor and reseller networks, companies can eliminate thousands of labor hours and ensure accurate information sharing.

1.7.B.i.e Payment management – electronic applications link companies with suppliers and distributors so that payments can be sent and received electronically. Electronic payment reduces clerical error, increases the speed at which companies compute invoices, and lowers transactions fees and costs.

1.7.B.ii Intra–Organizational Electronic Commerce – the purpose of intra-organizational applications that are critical to declining superior customer value. The E-commerce facilitates the following business applications.

1.7.B.ii.a Workgroup Communications – these applications enable managers to communicate with employees using electronic mail, video conferencing bulletin board. The goal is to use technology to increase the dissemination of information, resulting in better Informed employees.

1.7.B.ii.b Electronic Publishing- These applications enable companies to organize, publish, and disseminate human resources in annuals, product specifications, and meeting minutes using tools such as the World Wide Web. The goal is to provide the information to enable better strategic and tactical decision making throughout the firm.

1.7.B.ii.c Sales force Productivity- These applications improve flow of information between the production and sales forces, and between the firms and customers.

1.7.C Business Administration The Business-Administration[49] category covers all transaction between companies and jonehueut organisations. Uncouthly this category is in its infancy, but it could expand quite rapidly as governments use their own operations to promote a waviness and growth of electronic converse.

1.7.D Consumer- Administration- the consumer administration category has not yet emerged. However, in the wake of a growth of both the business consumer and business administration categories, government may extend electronic interaction to such areas as welfare payments and self assessed tax returns.

All[50] these of commerce consist of many types of transactions and business fruition which can be completed via different of e-commerce common types include.

- EDI electronic data interchange
- EFT electronic fund transfer
- purchases
- marketing and promotions.
- customer service and billing
- inventory management for global and multi-location entities.
- organizational communications usually intranet.

1.8 Types of Relations in Electronic Commerce[51]

The type of relationship determines the accessibility of information, acceptance and reliability of messages and transactions received or sent from one party to another, resulting business reactions.

The main four categories are:

1.8.a IntraEnterprise - between employees or organizational units of the same enterprise or institution. Such relationships can be inside a distributed oganization which needs a constant flow of information between its seperate sections. In this type of relationship the accesibility should be almost complete - their's no interest of hiding information, but more of sharing it.

1.8.b Partner - between "trusted" allies or between businesses with strongly common interests in the use of the linkage. Business partners, that co-operate in design or producing or marketing, might wish to share most of the information which is relevant for their shared fields of interest, yet they might wish to descrete other information, which may be "classified" or just irrelevant for the relationship. In this type of relationship both sides rely on each other, and therefore, the information that's being trasffered should be reliable.

1.8.c Stranger - between two business parties, who have no agreed upon or mutual interests. Two parties or more might wish to combine their resources for a specific mission or deal, in a non-commiting relationship. In such cases the transaction-information is carefully selected, and usually being double-checked by the reciever.

1.8.d Customer - might have conflicting interests. In a customer-seller relationship the information is presented only by one side - the seller. Naturally the presented information is not always reliable, since it fulfils only the interests of the seller. The transactions on the other way (from the customer to the seller) is usually reduced to service/product orders, and should be verified by the seller.

1.9 Application of Electronic Commerce Models[52]

There are a number of services that electronically provide users with: world, national, local news, sport, weather, entertainment news including movie and television reviews, financial information including stock and bond prices, interest rates and foreign exchange rates, and books, encyclopedias, and journals, such as may be founding public library. Personal shopping services electronically transfer description of items from a retailer to a shopper, to the retailer. Other examples can home finance, home banking exchange messages; electronically (have to as electronically) carry on conversations between two or more individuals. Complex data structures both upon the basic forms of data will be transferred by electronic commerce application e-commerce may be used to transfer education information. Another potential application of e-commerce is cooperation development and many more. This part explains some of the applications of commerce model.

1.9 A-Corporate Purchasing[53]

Corporate purchasing solution reduce paperwork and streamline purchasing processes by empowering employees to conveniently purchase and route appropriate approvals for their own office business supplies and other goods over the internet. Supply chain management solution link inventory, billing, and shipping between customers and suppliers to ensure more efficient supply/demand coordination.

1.9 B-Marketing and Promotions

Corporate identity and awareness programs, product and service marketing campaigns and electronic product and service literature publishing are just a few examples of now e-commerce support electronic marketing and promotions. Organizations can use the web to accomplish the following:

- Attract new customers through marketing and advertising
- Serve existing customers via customer service and support functions
- Develop new markets and distribution channels for existing products
- Develop new information based products for business to business and business to consumer e-commerce, organization do need to consider, however, who they're likely to reach via the Web, particularly with respect to consumers. Many consumers, particularly those new to the webs know the specific names of the web sites for which they're searching. Traditional advertising, such as print, television, and radio, can help build awareness for business-to-business web sites

as well. Expectations are also changing, and organizations must be able to meet the new expectations they promote through e-commerce marketing.

1.9 C-Brand Management and Awareness

The web enables organizations to get the world out faster and to longer audiences than ever before. However, merely marking people aware of your organization's existence is not enough, you need to present relevant information that gets the point across. Implementing E-commerce using a digital nervous system can help organizations with marketing and advertising, brand name management, and dissemination of product catalogs and sales information. E-commerce also makes product announcements easier and faster to deliver. Everyone from the raw material supplier to the ultimate seller in the chain must be able to products and services. Business partners must decide together which areas they will try to link firs. Each partner then focuses on key internal groups that have the most to gain by adopting Electronic Commerce. These groups will provide early successes and by in, which are the keys to driving adoption throughout the entire organization. Electronic commerce affects everyone's role in the supply chain and acts as a customer in others commerce helps the supply chain work more effectively and efficiently by lowering the cost of SCM activities, which can ultimately reduce prices to consumers. Because of the expanded marketing opportunities, Electronic Commerce increases options available in products and service and speeds the delivery of products and services to the ultimate consumer. Electronic Commerce also makes purchasing products easier for all customers along the chain. Effective supply chain management involves integrating all supply chain activities into one solid system.

Electronic commerce can help supply chain management teams determine how much of each raw material or intermediate or finished product should be processed at each facility, e-commerce can also help organizations decide which supply sources should be chosen. Working with their business partners, each player in the supply chain interactively determine the best production schedule, size, and sequence, Electronic Commerce helps business partners share information that enables them to forecast demand most accurately for each individual customer.

1.9 D-Customer Relationship Management

Electronic commerce provides business with a growing, dynamic channel for efficient delivery of good and business Electronic to business commerce. E-commerce enables organization to market goods and services to consumers and businesses alike online in a more personalized, dynamic environment and will increasingly include the delivery of digital goods and software, electronic media, and information. Customers, (business to business and business to consumer) has a dramatic impact on the way goods and services and managed, purchased, and sold from producer to customer/consumer. Electronic commerce provides organizations with these benefits.

- Increased speed and accuracy of information sharing between organization and their customers.
- Improved relationships with customers. Organizations make fewer errors when taking orders and are able to deliver goods and services to customer more quickly and efficiently.
- Better management of the customer relationship using E-mail, online FAQ (frequently asked question) lists, and automated problem-resolution systems.
- Faster response to customer orders, requests and problems, which ultimately helps increase customer satisfaction.

A digital nervous system puts the customer at the center of this process. By using technology to deal directed with customers. Business has the potential to deliver improved methods of customer service and the ability to help customer solve their own problems. As an organization's digital nervous system is extended beyond its walls, the organization begins to realize the benefits of using such a system for customer relationship management. One major benefit of using technology in this manner is close customer interaction, enabled by the web. Connecting all parts of the organization (and its business partners) and sharing customer information enable rapid collaboration and response around new customer opportunities of potential customer losses. By using the Internet to connect to information, and act quickly on customers and partners, provide improved access to information, and act quickly on customer/market feedback, an organization can better manage the customer relationship.

1.9 E-Customer Billing and Payment

As E-commerce grows, more organizations are looking to save time and money by billing and receiving payments from customer via the web. The seller can save time and money by generating bills directly from its accounts receivable system, which can out the estimated cost of billing between 35 and 50 percent. Web based bill delivery and payment require a unique combination of corporate and consumer software expertise sing with efficient transaction processing and proven operating capacity.

1.9 F-Online Help Desks

Online help desks are another useful feature of electronic commerce. Organizations can save huge amounts of money by providing online, automated help 24 hours a day, rather than using employees to answer individual customer questions. Since many customers ask common questions, providing a FAQ (frequently asked questions) section can save an organization significant time and money. During off hours, customers can check the status of orders, get answers to frequently asked questions, and have access to knowledge base than can help them solve problems.

1.9 G-Product Catalogs and Online Buying

Online, information-only catalog web sites were one of the first uses of E-commerce on the web. Today, catalog companies provide full-color catalogs, online purchase and return services, and 24-hour general customer service.

1.9 H-Purchase Orders/Order Entry

According to an Electronic Commerce Association (ECA) study, only 5-10 percent of organizations are actually doing E-commerce based purchasing in the business-to-business arena.

1.9 I-Customer Service

A digital nervous system can provide a fast easy way for an organization to help customers.

Examples [54]

There are many well-established examples of electronic commerce in a wide range of industry sectors and a wide range of application areas. A few of these will serve to illustrate the nature of current activity.

Retail

ibs (http://www.bookshop.co.uk)

The Internet Bookshop exists only as a site on the World Wide Web - it has no physical outlets. The shop specialises in technical books and currently offers more than 780000 titles. Customers visiting iBS can browse, search using keywords, and obtain detailed information on individual titles, including a descriptive text, bibliographic information, contents list, reviews, and suggested readership. They can order and pay for books, which are then delivered through publishers' established international delivery channels.

Virtual Vineyards (http://www.virtualvin.com)

Like iBS, Virtual Vineyards exists only as a site on the Web. It offers wines and gourmet foods, providing an outlet for a number of small Californian wine producers. There is detailed on-line information on the various wines and foods, and also an on-line query service (using e-mail). Customers can order and pay using either credit cards or electronic cash. Customer orders are transferred electronically from Virtual Vineyards' San Jose office to their Napa Valley warehouse, along with instructions from printing the shipping label and enclosures (such as tasting notes). The goods are shipped by Federal Express. Customers can track the progress of the delivery on-line by accessing the Federal Express site.

Finance

Barclays Bank (http://www.barclays.co.uk)

Many banks have offered on-line querying of accounts for some time. Following relaxation of controls on the export of security technologies from the USA, Barclays has extended this to a large scale trial offering customers full banking services from their home computers.

ESI (http://www.esi.co.uk)

Electronic Share Information Ltd offers an on-line share information and trading facility. Customers can view London Stock Exchange prices and the FTSE 100 index, buy and sell shares on-line via ShareLink, use a range of technical analysis and research tools, obtain company profiles and share tips, request automatic notification of share price changes, and obtain real-time portfolio valuations. Launched in September 1995, the service now has 15000 registered users and attracts 1.25 million visits per month.

Distribution

DIPA

DIPA GmbH supplies high quality photographic images. Customers can browse an extensive photographic library and order the required images which are then delivered over satellite links.

Oracle (http://www.oracle.com)

Potential customers can now access Oracle's Web site and browse information on the company's products. They can then download free trial versions of various products, or pay on-line and download full versions. Because of potential legal and financial problems, the on-line purchasing and delivery service is currently limited to United States customers only.

Pre/post Sales Support

Hewlett Packard (http://www.hp.com)

Hewlett Packard's "Access HP" Web site provides thousands of pages of information, including general company information, news, worldwide contact points, new product announcements, and details of HP's wide range of products and services.

GE Plastics (http://www.ge.com/gep)

GE Plastics is an industry leader in the field of engineering plastics. The company's Web site provides an overview of the company's products, detailed profiles of the properties of each material, and guidance and recommendations for designing applications using the company's materials. There is also an on-line "Technical Tip Of The Week" contest whereby any visitor can submit a tip for working with GE materials. The company selects the best tips for incorporation into its "Past Technical Tips" pages.

Engineering design

Ford

Ford engineering teams worldwide collaborate in the design of new car engines using Ford's private network. The design support system is a combination of a real-time videoconferencing system and a shared "design whiteboard". Any participant in a design conference can draw or write on the whiteboard, drag objects onto the whiteboard, and edit objects on the whiteboard. All changes to the whiteboard are immediately visible to

all other participants. The object types supported include CAD drawings, text documents, and video clips.

GEN (hhtp://www.gen.net)

The Global Engineering network is co-ordinated by Siemens Nixdorf and has participants from many European countries. GEN is a "marketplace for engineering knowledge", bringing together the suppliers of components and sub-assemblies and those who might incorporate those components or assemblies into their own new products. The suppliers enter detailed technical information (perhaps including 3D CAD drawings) into the GEN network. Potential customers can then search the supplier information looking for "best fit" components or assemblies, and can experiment with incorporating those components or assemblies into the early stages of their own product designs.

Business Support

CitiusNet (e-mail: mailto:citius@mail.citius.fr)

CitiusNet is a well-established system for supporting business-to-business electronic commerce. It currently has three major elements - altius, citius and fortius. Altius is an electronic catalogue of industry and office supplies. Citius is a system for handling trading transactions. Fortius supports electronic payment by EDI, and is used not only for payment of goods selected from altius and traded over citius, but also for routine transactions such as pension and insurance payments. citiusNet is a multi-language service that is offered internationally. The systems were developed by DDP from Lyon, France, with the co-operation of various partners from Spain, Belgium, Germany and Italy. DDP now plans to extend its services to offer general business support ("Intermediation"). DPP will handle all routine operations (banking, administration, pension funds, etc.) on behalf of its subscribers, thus allowing those subscribers to concentrate on their core businesses.

Publishing

The Times (http://www.the-times.co.uk)

The Times and the Sunday Times are now published on-line. The complete content of the newspapers is available, and access is free. Using the "Interactive Times" facilities, users of the on-line service can tailor the newspaper to their own personal interests and tastes or perform a search for past articles that include specified keywords.

Professional Services

De Kreek (http://www.dds.nl/dekreek)

Mr Jeroen de Kreek, a lawyer from Amsterdam, provides a legal question answering service that is available 24 hours a day. Users of this service are led through a hierarchy of menus that aids them in ultimately formulating their question as a text message. Mr de Kreek then responds to this question, normally within two hours. The response to the first question is free, but subsequent questions incur charges.

International contact

Global Tradepoint Network (http://www.unicc.org/untpdc)

The Global Trade point Network is a huge network of business information, developed under the UN-supported Electronic Trade Efficiency Programme. By interfacing to established national databases, the network aims to supply key trading data for countries across the world. Such data might cover, for example, market information, transportation options and prices, insurance facilities, credit availability, customs requirements, and import/export regulations. Further, through its "electronic trading opportunities" system, the network serves as a meeting place for buyers and sellers world-wide. Potential matches between buyers and sellers are identified by using both geographical details and information on products offered or required, the latter being expressed using the Harmonised Customs Tariff codes. Once a potential match has been identified, the buyer and seller establish contact directly.

Shared business processes

Tesco

Tesco operates around 540 supermarkets in the UK. The company has a "sales based ordering" system whereby information on product sales at individual supermarkets, as collected by the checkout scanners, is forwarded electronically to the computers at the company's Store Control Centre. These computers determine the goods needed to replenish the stock at each store, and send this information electronically to the computers at the Tesco depot serving that store. For many products Tesco itself holds no stock, so orders are generated automatically and forwarded to Tesco's suppliers using EDI. On delivery to the Tesco depot, the replacement stock is immediately shipped on to the appropriate stores. Within 24 hours of an item being sold by the supermarket its

replacement is back on the shelves. The re-stocking system relies on electronic communication and on close co-operation between Tesco and its suppliers, who in effect are partners in a shared business process of replenishing products on the supermarket shelves.

1.10 Electronic Commerce Project Life Cycle[55]

Below are the seven stages of the Electronic Commerce life cycle. Each is linked to resources that are useful in managing each stage.

1.10.a- Awareness Training
1.10.b- Business Analysis
1.10.c- Requirements Analysis
1.10.d- Design
1.10.e- Implementation
1.10.f- Integration and Validation
1.10.g- Maintenance

1.10.a Awareness Training- is done to give key people in a company a basic understanding of what a technology is, what it can do for them, and where resources can be found (e.g. consultants, training) to make decisions about implementation. Working at this stage assumes that people know nothing or little about the technology and feel a need to know more. It provides people with a framework for intelligent discussion and planning about a particular form of electronic commerce.

1.10.b Business Analysis- Once there is awareness it is all to easy to jump to the detailed planning of stage 3 - requirements analysis. But business analysis is critical if Electronic Commerce is to provide maximum value to an organization. The worst case is that without business analysis, electronic commerce will be counterproductive. The more likely possibility is that without deliberate business analysis electronic commerce will have some benefits, but with greater expense and less return than should be the case. The goal of business analysis is to move a company toward the best case, i.e. an electronic commerce environment that will make the company more efficient, more productive, and more competitive.

1.10.c Requirements Analysis- is identification of the electronic commerce system that will meet the previously defined business needs. As an example a business need may be to keep customers informed of ever changing products availability, costs, and terms. The requirement to meet this need might be a Web based catalogue linked to a data base on prices and availability; and set in a new organization where a single group maintains a common data base for the Sales and Purchasing Departments. Requirements analysis can be seen as a "wish list", or as an envelope of electronic commerce system functioning within which solutions can meet business need. In the real world it is impractical to build systems that will meet all requirements. On the

other hand it is impossible to build a system that will meet any requirements unless those requirements are clearly articulated.

1.10.d Design -is an activity which sets out the specifics of system. Questions to be resolved at this stage include:

- What will the system do?
- What is the system's design?
- Who are my potential vendors?
- By when do I need different parts of the system up and running?
- What tasks need to be done, and by when, to get the system implemented?
- What will the system cost?
- How will the system be integrated into other existing systems?
- What people have to be involved in the process, and for how much time?
- What are the needs for training?
- What teams need to be formed to implement the system?
- What organizational changes are needed to take advantage of the system?

1.10.e Implementation-The purpose of the implementation phase is to acquire and implement the system. This is the phase when new technology comes in the door, training is conducted, reporting relationships change, and new electronic commerce processes begin to function. Making this work involves careful management of activities and resources to move from the previously developed "paper-based" plans to the reality of implementing new systems in a company that at the same time is trying to satisfy its customers and respond to ever changing business conditions.

1.10.f Integration and Validation Testing- makes sure that the system performs in accordance with its specifications. In other words, that it does what it is supposed to do and does not do what it is not supposed to do. First, individual modules are tested in isolation. Then integration testing begins as modules are hooked together. Finally the entire system is tested with the participation of the users. At this point the system may be put into service, but testing can be said to continue for a few months to assure that users are able to accept the system as a tool to assist in their routine work.

1.10.g Maintenance- the last phase of the project life cycle is what happens to the system after it has become operational. It includes changes to the hardware, software, and procedures for using the system. This phase includes keeping the system going, adapting it to unforeseen circumstances, and planning for the evolution to new systems to meet changing business needs and the potential offered by new technology.

1.11 Infrastructure of Electronic Commerce

Just as in traditional commerce electronic commerce requires a substantial infrastructure composed of intermediaries that allow sellers to transact business with buyers.

The infrastructure of e-commerce may be broken down into four parts.

1.11.a. Network service providers (eg. Internet access)
1.11.b. Hardware (eg PCs, routers servers etc)
1.11.c. Software to run this hardware and electronic commerce packages.
1.11.d. Enabling services (e.g. e-payment, authentication, certification, services, advertising).

1.11.a The[56] foundation is the intermeshed and wide –area telecommunications networks, extended by the metropolitan and local area nets. Deploying both guided (such as the fiber-optic and coaxial cable and wireless transmission media (such as the satellite microwave and the radio under computerized control, these networks span the globe.

Thus E-commerce is inherently global. Yet there are , and will persist major differences in national and regional development of the infrastructure as well as in the national governance of telecommunications, with government monopolies in a number of countries limiting the deployment and imposing high telecommunications costs.

The telecommunications capabilities are delivered for business use through two essential means. The older order is that of proprietary value added networks (VANS) established by the vendors to deliver services over and above those of common carriers that are licensed by government to provide communications services to the public. The new order is that of the Internet, which has become the principal vehicle of E-commerce. The[57] following are essential for creating successful e-commerce network.

1.11.a.i. Speed is of utmost importance in the list of e-commerce requirements. Studies show that Internet users will wait no longer than 30 seconds for a page to load and no longer than two minutes for a system to return information. Internal users want consistency inspeed to know, for instance, that it will always take 10 seconds to retrieve e-mail, not five seconds this time and 70 seconds next time. External

customers will not tolerate delays. If they wait too long, they'll move to a competitor's site.

1.11.a.ii. Security is a major issue to manage when dealing with the Internet. In spite of a firewall and pass-through to the database and line-of-business applications, there's always a chance that business data will be compromised. Access policies, IP tunneling, IP masking, and encryption are commonly used security measures.

1.11.a.iii. Reliability is also essential. Many Internet users are forgiving of occasional outages and down time, but there are too many factors outside of your control that affect this. Internal corporate users, however, are less forgiving. With more vital-to-business information stored on remote servers and applications, downtime and delay-causing congestion means an operating loss.

1.11.a.iv. Scalability is a requirement from day one. The number of users can never compromise the speed of the e-commerce application. The site you build should have room to grow by a factor or 1,000 as your online business grows; thus, if you are now supporting 100 transactions per day, you should prepare to handle as many as 100,000.

1.11.a.v. Ease of Management keeps the network traffic flowing at a smooth pace at all times. Few Internet applications provide tools to measure performance, which is necessary to ensure network efficiency.

To[58] support the rapidly growing commercial Internet landscape an entirely new industry called Internet services Providers (ISPS) has emerged in the last five years. The Internet service Provider industry offers a wide variety of technologies and services.

- Internet access for consumers and organization
- Network Management
- Client and server software for managing and publishing
- Payment Systems

1.11.b Hardware means a personal computer with modem and telephone line.

Routers[59] they exchange information between themselves so that they know the conditions on the network, which links are active and which nodes are available.

Servers [60] are special Internet computers web server can host one or more web sites.

1.11.c. Software[61] means those packages or programme that allows people to access World Wide Web. Internet Explorer and Netscape Navigator are the two most popular web browers.

1.11.d. E-services means those services, which are there on Internet either via credit card or any other means as offered by the organizations.

1.11.i Industry Framework of E-commerce[62]

Electronic commerce not only affects transactions between parties, it also influences the way markets will be structured. The Information Superhighway

The Information Superhighway has many different types of transport systems and does not function, as a monolithic entity is no single interstate highway that connects the digital equivalent of Los Angeles to Miami. Instead, the architecture is a mixture to many forms of high-speed network transport, whether it be land-based telephone, air based wireless, modem-based PC, or satellite-based. For instance, mail sent from a portable PC in the French Riviera to a computer in Los Angeles might travel across several different types of transport networks interconnected with each other before it reaches its destination.

The players in this industry segment can be called information transport providers. They include: telecommunication companies that provide phone lines, cable TV systems that provide coaxial cables and direct broadcast satellite (DBS) networks; wireless companies that provide mobile radio and satellite networks; and computer, including private networks like CompuServe or America Online, and public data network like the Internet.

This industry segment also includes hardware and software tools that provide an interface with the various network options, and to the customer premises equipment (CPE), or terminal equipment which is a generic term for privately owned communications equipment that is attached to the network. This category of subscriber terminal equipment can be divided into three parts: cable TV set-top boxes, computer based telephony, and networking hardware (hubs, wiring closets, and routers or digital switches). The terminal equipment is in fact the gateway to information services, commercial transactions, and 500 digitally compressed channels.

The biggest area of growth over the last five years has been in the router business. Routers and digital switches help to connect large networks (or internet works). Routers are devices that can connect the local area networks (LANs) inside various organizations with the wide area networks (WANs) of various network providers. This interconnection enables easy communication between separate networks across geographical distances and providers access to distributed computing resources. The router industry is a multibillion dollar industry that is dominated by players such as Cisco, bay Networks, and #COM, all three of which supply equipment that links data communications networks through the internet. In a recent valuation by Business Week, Cisco was rated as the fortieth largest company in America, with a market value of $ 26 billion. Not bad for a company with an extremely specialized product.

1.11.i.a Multimedia Content and Network Publishing

The Information Superhighway is the transportation foundation that enables the transmission of content. The electronic system through which content is transmitted is analogous to the non electronic world in which different types of product (content0 are stored in distribution centers (network publishing servers) before they are loaded onto various vehicles for transport.

Currently, the most prevalent architecture that enables network publishing is the world wide web. The web allows small businesses and individuals to develop content in the form of Hyper Tax Market Language (HTML) and publish it on a web server. In short, the web provides a means to create product information (content) and a means to publish it in a distribution center (network server).

1.11.i.b Messaging and Information Distribution

The information content transferred over the network consists of text, numbers, picture, audio, and video. However, the network does not differentiate among content, as everything is digital that is, combinations of ones and zeros. Once content has been created and stored on a server, vehicles, or messaging and information distribution methods, carry that content across the network. The messaging vehicles is called middleware software that sits between the web

servers and the end user applications and masks the peculiarities of the environment. Messaging and information distribution also includes translators that interpret and transform data formats.

Messaging vehicles provide ways for communicating non formatted (unstructured) as well as formatted (structured) data. Unstructured messaging vehicles are fax, electronic mail (Elecon-mail), and form-based systems like Lotus Notes. structured documents messaging consists of the automated interchange of standardized and approved messages between computer applications via telecommunications lines. Purchase orders, shipping notices, and invoices are examples of structured document messaging.

For the purpose of electronic commerce, existing messaging mechanisms must be extended to incorporate reliable, unalterable message delivery that is not subject to repudiation, to be able to acknowledge and give proof of delivery when required. The challenge in the development of messaging software is to make it woke across a variety of communications devices (PCs, workstations, set –top boxes, and wireless communications), interfaces (characters, graphics, and virtual reality), and networks (satellites, cable, twisted pair, fiber optics, and wireless).

Common Business Services Infrastructure

Doing business online has received attention for its potential, as well as for such shortcomings as inadequate directories, inadequate online payment instruments, and inadequate information security. The common business service infrastructure attempts to address these shortcomings.

This infrastucture includes the different methods for facilitating online buying and selling processes. In online commerce, the buyer sends an electronic payment (a form of electronic check to digital cash) as well as some remittance information to the seller. Settlement occurs the payment and remittance are authenticated by the seller and accepted as valid.

In order to enable online payment for information and ensure its safe delivery, the payment services infrastructure needs to develop encryption (making contents

indecipherable except for the intended recipient) and authentication (making sure that customers are who they say they are) methods that ensure security of contents traveling on the network. In addition to generic payment services, electronic commerce will need to accommodate other desirable payment related service such as currency exchange, cash management, escrow, investment and brokerage, financial information and reporting, and billing and payment. The development of secure transactions and secure online payment instruments (such as digital cash and electronic checks) is currently one of the most active areas of electronic commerce research/ development.

1.12 Legal Issues of Electronic Commerce

Issues concerning Electronic Commerce: There are few Issues concerning Electronic Commerce, which can be summarised below.

Legal issues regarding e-commerce one of the difficulties to resolve because cyberspace doesn't really exist as a physical place, where should legal issues be resolved, and who have the right to adjudicate those cases. The case law for e-commerce is still immature and incomplete. Both national and world courts can set any standard laws governing e-com. The[63] Internet is frequently referred to as the new "wildwest". Unbridled by law. As business flock to the Internet the private citizens, including children, increasing use the internal, its environment is facing scruiting by government agencies, consumer groups, and business coalitions. Depending on the issue, some groups want lawmakers to intervene, impose and enforce "laws of the land "to this new wild west. However, on other issues, the very same group can vehemently oppose any legislation acts and proper self-regulation. For those issues where intervention is designed, the problem is to decide what law for what land in this global environment. Each country has three categories of Internet users to serve.

1.12.i Government and Law Enforcement Agencies
1.12.ii Businesses
1.12.ii Private Citizens.

The primary issues forced by these three groups are

1.12.a. Encryption Regulation
1.12.b. Privacy Rights of Citizens
1.12.c. Impropriate Web Linking Practices
1.12.d. Domain Name Disputes
1.12.e. Tax Polices
1.12.f. Electronic Agreements
1.12.g. Laws and the Responsibility of Internet Service Providers.

1.12.a -Cryptography Issues-Cryptography is a method of mathematical encoding used to transform messages into an unreadable format in an effort to maintain confidentiality of data. The important point to understand is that the encryption process transforms a clear text message into non- decipherable known as cipher text. Encryption and decryption keys are necessary to transform clear text into cipher text and vice-versa. Good encryption methods mask the underlying message, and deciphering well-encoded

message should be virtually impossible without the decryption key. The strength of the description process is largely dependent in the key size. The larger the key size, the stronger the encryption process. Because of the inability to decipher well-encoded message, government bodies and law enforcement agencies are very concerned with issues surrounding the length of the key. Two very controversial legal issues arise regarding keys.

- how large a key length will the government allow to be exported outside the country.
- what kind of access privileges, if any, to decryption keys should law enforcement agencies be granted.

1.12.b- Privacy Issues- Became of the vast amount of data that can be collected on the Duternet and because of its global nature, private citizens worldwide have expressed concerns over their nights to privacy. Shoppers browsing through various stores in a physical shopping mall, stopping to glance at a specification in as specific store, do hot have to worry that their energy move is recorded. The available technology, however, used in electronic commerce and internet sites makes it perfectly feasible for data to be recorded about every item "clicked- on" by a user browsing through an web site privacy groups around the world have formed in the interest of protecting the privacy night of India duals. A few of these groups are.

- center for Democracy and technology
- electronic Frontier foundation .
-electronic privacy information center.
- privacy rights leaving house.
- outline privacy Alliance.

The information privacy very generally to be the night to have one's personal or business data kept confidential.

The five core principles of privacy protection that are generally widely accepted.

-Notice consumers should be made aware of an entity's information practices before any personal information is gathered.
-Choice consumer should be given the opportunity to cost on denying any secondary uses (uses other than the processing of a transaction) of information. Secondary uses include mailing notice or transfer data to third parties.

-Access-consumer should be able to access the personal data and review it without significant delays. Further, consumers should be able to easily correct inaccurate personal information in a timely manner.

Integrity and security the data regarding consumer's personal information should be processed in a fashion so that the data is accurate. Further, the data need a to be kept confidential as it is transmitted, processed and stored by the entity.

Enforcement consumers should have recourse if any of the above care priciples are violated.

There are other several categories of concerns arise relating to privacy issues depended upon the self-regulation of different countries.

1.12.c Web Linking Issues- The Internet is built on the concept of hypertext or an image, which has the address or location of another web page attached to it. When a user clicks on the hypertext link they are instantly transported to the attached location and the associated web page is automatically loaded. The links are frequently to web pages that reside on quarter site. These a user that clicks on the hypertext link at one site may "jump to author site. This ability to place, at no cost other than many simple programming a link to any web site in the world allows users to traverse the internet, following paths that will hopefully lead them one useful voyage.

Legal issues arise however, as business organizations, and individual web sites begin to inset links to sites from their web sites. Some practices that have already caused disputes include.

- Inappropriately referencing a linked site.
- Retreiving and displaying information from a linked site without proper reference.
- Retreiving and displaying information from a linked commercial site with advertising
- Frames without displaying the site's advertisements along with the retreived document
- Unauthorized use of trademark in meta tags.
- Unauthorized display of registered trade marks.

1.12.d Domain Home Disputes Prior to 1992, the U.S government directly the administration of top level domain names such as "com" (commercial) or " org" (organization). In 1992, the U.S government contracted with a corporation, network solution inc. (NCI), to administer the top- level domains. The actual registration service is

called inter NIC, which is located at NCI and funded in part by the national science foundation in October 1998, the U.S government intended to hand over this task to an international move profit corporation, Internet corporation for assigned names and numbers.

As many business entities and services organizations have expanded their cities to the www, the assignment and use of top-level domain names has resulted in turf battles over domain names, many of which involve the use of trademarks. Thirdly domain names were to be method posed some problems.

- Companies with similar or identical trademarks for different products, both using to use the same domain move.
- Individuals or business registering for domain of competitors to use as a marketing device.
- Individuals or businesses registering domain names for which they personally have no use and holding them "hostage " for a ransom.

Today domain names are still issued on a first-come, first serve basis, but applicants are explicitly informed that in issuing the requested domain name that no other equality has registered with the same name.

1.12.e Internet Tax Issues- Companies[64] that do business on the web are subject to the same taxes as any other company. However, even the smallest web business can become subject to taxes in many sates and countries instantly because of the Internet's worldwide scope. Traditional businesses may operate in one location and be subject only to one set of tax laws for years. By the time those businesses are operating in multiple states or countries, they have developed the internal staff and record-keeping infrastructure needed to comply with multiple tax laws. Firms that engage in electronic commerce must comply with these multiple tax laws from their first day of existence. An online business is potentially subject to several types of taxes, including income taxes, transaction taxes, and property taxes. Income taxes are levied by national, state and local government on the net income generated by business activities. Transaction taxes, which include sales taxes, use axes, and customs duties, are levied on the products or services that the company sells or uses.

Customs duties are taxes levied by the United States on certain commodities when they are imported into the country. States and local governments on the personal property and real estate used in the business levy property taxes. In general, the taxes that cause the greatest concern for web business and income taxes and sales taxes. The number of taxing authorities in the United States exceeds 30,000.

1.12.f Electronic Agreements- Traditionally[65] legal agreements have been made in a written, hard copy format that bears the handwritten (or equivalent, such as a thumb or footprint) signatures of the parties involved. Transactions conducted on the Internet typically occur in real-time. The process of utilizing hard copy agreements negates many of the desired attributes of electronic commerce, such as speed of transacting and reduced paperwork. Thus, new methods of delivering enforceable legal agreements (contracts) and producing valid signatures in a digital format are necessary for most aspects of completing electronic sales, transactions. The delivery of electronic legal agreements on the Internet is typically via an electronic form with a delivered statement that the user (signer) reads and "clicks" on an "I Accept" button. This type of agreement has been upheld in a few court cases. Computer programs called electronic or intellect agents are entering into another form of electronic contract. The computer programmed agents are essentially "Authorised" to contract on behalf of the party owing and operating the programs, such as these that have the capability to locate potential transaction partners and negotiate on their computer programs necessitates new legal guidelines for enforceable agreements.

The American Bar Association (ABA) discusses some important attributes of signatures.

- Signer authentication – a signature should indicate who signed a document, message or record, and should be difficult for another person to produce without authorization.
- Document authentication – a signature should identify what is signed, making in impracticable to falsify or alter either the signed matter or the signature without detection.
- Affirmative act – the affixing of the signature should be an affirmative act which serves the ceremonial and approval functions of a signature and establishes the sense of having legally consumed a transaction.
- Efficiency – optimally, a signature and its creation and verification process should produce the greatest possible assurances of both signer authencity and document authencity, with the least possible expenditure of resources.

The ABA also contents that the use of digital signatures, when performed correct, not only meets these attributes, but also can surpass the handwritten signature on paper technology.

1.12.g -Internet Service Providers and International Libel Laws

The Internet, because of its global expanse, raises some, interesting legal issues about international conflicts over freedom of speech laws and what constitutes libel. In general libel refers to the act of publishing a false and defamatory statement about and their person that damages that person's reputation.

1.13 The Strategic Challenges of Electronic Commerce

According to the site www.enix.co.uk[66] the rise of the Internet (electronic commerce), since the advent of the World Wide Web, has provided an easy to use communication channel for businesses to contact current and potential customers. The emergence of the Internet as a general communication channel has also given rise to the possibility of widespread electronic commerce. Even though there is still much debate relating to electronic payment for commercial activities, this is clearly an area of growth. These technologies include:

-Organisational support systems, such as workflow and groupware making businesses more efficient.

-Customer contact databases - helping capture information about customers and facilitate new methods of marketing

-Electronic payment systems for goods and services - these are emerging, although the majority of payments are still based on relatively expensive traditional cheque clearance.

Collectively and individually, these areas will contribute to major changes in the way a company conducts its business. Enix have coined the term Workware to describe the combination of these technologies.

The emergence of Electronic Commerce will be underpinned by three key components.

1.13A. -Marketing (Customer Satisfaction)

1.13 B- Organisation (Process Support)

1.13 C -Banking (Payment Systems)

1.13 A -Marketing

Champy, Buday and Nohria[67], argue that the rise of electronic commerce and the changing consumer processes brought about through electronic communities are likely to lead to a new wave of reengineering, mergers and acquisitions. Moreover, organisations may expand into new business areas, taking on roles unforeseen prior to the rise of the Web. For example: a magazine publisher, Condé Naste, has moved into the travel business; Bill Gates is now an electronic real estate agent; and a recruitment

advertising agency, Bernard Hodes, has now become an electronic recruitment company.

The emergence of electronic commerce will significantly impact what we currently call 'marketing'. Clearly, the appearance of electronic communities Armstrong and Hagel[68] implies that marketing professionals must expand their horizons, as the advent of this technology will threaten existing channels of business. Those involved in marketing need to understand the full range of products and services required by the electronic community. They must learn to take advantage of the technology that allows customers to move seamlessly from information gathering to completion of a transaction, interacting with the various providers of products and services as necessary. Armstrong and Hagel propose four types of non-exclusive electronic communities, those: interested in transactions; sharing common interests; indulging in fantasy games; and with a shared life experience. The business opportunity is for those who support and interact with these communities, building customer loyalty on an ongoing basis. By satisfying the requirements of relational marketing and transactions, companies may gain important insights into their customers' nature and needs. For example, a baby products company could entice customers to order items from an associated on-line catalogue by providing bulletin boards for new parents.

The desire to establish long-term customer relationships with increasingly sophisticated demands has led companies to seek new ways of acquiring, managing and utilising customer information Peters and Fletcher[69], Furthermore, advances in information technology have fundamentally altered the channels through which companies and customers maintain their relationships. The capacity to obtain and apply customer information within processes has become a key strategic issue. This often places the company in the position of requiring sensitive personal information from customers. Gummesson[70] views marketing as a set of relationships, networks and interactions and lists 30Rs (relationships) in contrast to McCarthy[71], 4Ps (Product, Price, Place & Promotion). Gummesson highlights the fact that the electronic relationship is not discussed in the marketing literature even though it is practised widely by many businesses. He links relationship marketing to the imaginary (similar to a virtual or network) organisation. He argues that by increasingly applying IT,

more relationships are established. They create a new type of bond to customers and between employees.

The electronic relationship extends beyond the bounds of the organisation into the market as seen in the example of airline, hotel and car rental reservation systems. The communities established have a re-enforcing effect. These insights force us to re-examine traditional theories of economics, systems, organisations, marketing, competition and transaction cost analysis. As the boundaries between firms and markets dissolve, a characteristic of relationship marketing and network organisations, a new image of interaction and business is needed.

The importance of information exchange in relationship marketing (particularly using an electronic channel) requires a clear understanding and recognition of the potential problems. Privacy is also an issue - what is a private change from one person to another as well as between different cultures. Those who use the Internet are likely to be better-educated and less willing to give information, unless they trust the recipient. Companies need to realise that the only reason they hold information on a customer is because they have a relationship with that customer - something which is not transferable. Those using electronic channels to reach customers are likely to target better-educated and more affluent customers. They need, therefore, to ensure that their customer information systems are appropriate. An understanding of the trust building process is also required. Firms need to make a feature of their trustworthiness (a unique selling point!). Trust is best developed through processes. Processes tend to be customer facing - within each customer interaction trust is built-up or eroded. Companies must be absolutely clear about the value and intended use of information. Collecting information because it is technically possible (and one day might be useful) is likely to weaken trust development.

Hoffman and Novak[72], assert that the Web heralds an evolution in marketing concepts. In order for marketing efforts to succeed in this new medium, a new business paradigm is required in which the marketing function is reconstructed to facilitate electronic commerce in the emerging electronic society underlying the Web.

The "manytomany" communication model of the Web (in fact many instances of many-to-one) turns traditional principles of mass media advertising inside out (a one-

to-many model) (Hoffman and Novak, 1994). The application of advertising approaches, which assume a passive, captive consumers are redundant on the Web.

Surprisingly, as it is currently evolving, there is little activity aimed at including the consumer in the development of emerging media (Dennis & Pease[73] In order to adopt a market orientation, firms must understand their customers and engage in consumer research. Potential customers are most effectively engaged through new conversational marketing approaches. Anecdotal evidence suggests there are two types of customers - 'convenience shoppers' and 'explorers' (those street-smart consumers who are happy to surf the Web looking for the best deal or most appropriate product combination). Furthermore, the sheer size of the Web (trillions of documents and growing exponentially) means finding relevant information is becoming more and more difficult - despite the best efforts of search engines such as Yahoo. Our research suggests that the large proportion of Web users would rather rely on an intermediary (community operator) to sift and select information on their behalf. Web sites not endorsed will require knowledge of the address (URL) and are unlikely to be accessed when similar information, products or services are readily available inside the community. Contributing to the rise of intermediaries are associated issues of privacy, trust and security Schell[74] Whilst there is much discussion on the issues of Internet privacy and security, in the context of normal business activities, many millions of people trust others with their personal financial information. Examples include ordering over the telephone, passing a credit card to an unknown waiter, even signing direct debit mandates. If an error occurs in these types of transactions we trust the service provider to correct the error. So why is it that we expect the Internet to support a level of trust and security which we do not observe in everyday life? There is no reason why similar trust relationships cannot be established in electronically mediated discussions. If anything, it becomes easier for an individual (or group of individuals) to seek retribution on those that break the rules within an electronic community. Evidence of this can be found in the tendency to attack those that try to advertise on academic discussion groups (mail bombs) and community policing against pornographers in the Netherlands.

Marketers must reconstruct their advertising models for the interactive, consumer-controlled medium. The traditional customer loyalty ladder (Suspect, Prospect,

Customer, Client, Partner, Advocate) is still applicable, but now operates in a different fashion. The first three stages are often instantaneous in electronic commerce. The transition from customer to advocate relies on loyalty earned through trust. The instantaneous nature of the Internet makes this more difficult.

1.13 B Communicating Across the Value Chain

It should be recognised that processes are not confined within one organisation - they cross the value chain as demonstrated by the following example. Steinfield, et al[75] describe a large, multinational, electrical appliance and consumer electronics manufacturer that used France Telecom's Teletel system to support EDI-like connections to approximately 10,000 separate retailers and independent service engineers throughout France (accessed through Minitel terminals). The ubiquitous Teletel service and the commercial applications, which emerged to exploit it, provide insights into the development of commerce on a worldwide Internet.

The after-sales service subsidiary of this manufacturer provided replacement parts and training to its widely dispersed customer base. The Teletel system permitted electronic transactions, even with the smallest trading partners. Through the use of on-line ordering, coupled with courier service for rapid delivery, the firm was able to eliminate regional parts warehouses and reduce the average repair time from two weeks to two days. In the past, service engineers waited until they had a sufficient need for parts before driving to a regional warehouse. Once the system was implemented, they used the Teletel based "just-in-time" stocking practice for replacement parts.

Moving to a centralised warehouse reduced the need for replicated inventories and extra personnel around the country, creating substantial savings. Moreover, service engineers were further bound-in following the introduction of a revenue producing, expert system-based, training application. Technicians connected to the expert system, which asked a series of questions designed to diagnose the fault and indicate the repairs needed.

This "just-in-time" training service meant that technicians no longer required expensive and lengthy in-person training - a difficult task given the short life cycle of

new electronics products. Service engineers were charged a fee for connecting to the service, but it clearly helped them to provide a faster service to the end customer whilst also further enforcing their dependence on the supplying firm. The expert system also accumulated data on repair problems and provided valuable feedback to the design and manufacturing divisions of the company. A primary motivation for this service was to dissuade service engineers from obtaining parts and services from other suppliers. The ubiquity of Minitel merely created the environment within which the supplier could manage relationships with a very large set of buyers, without opening their service to other suppliers.

1.13 C-Payment Systems

Commerce on the Internet is already a reality. Whilst there are strategic challenges for all businesses, they are especially ominous for financial services and banking organisations. The inherent communication facilities offered are rapidly being integrated into every day usage Cronin[76], Business transactions carried out over the Internet were estimated at $500 million in 1995 and projected at $1 billion in 1996 Waraker[77], This is still significantly less than 1% of retail sales in the US. According to INPUT IT Intelligence Services, interactive retailing via the Web will grow to $165 billion by the year 2000. To date the emphasis has been on the Internet as a vehicle for communications with customers and other companies operating on collaborative ventures (mostly e-mail). As the capabilities of the medium are better understood, an ever-increasing number of organisations are concentrating on capturing business transactions and on-line sales. The Internet Mall lists some 240 companies offering everything from books to flowers to travel Banking Technology[78]. A recent report gave a representative sample of 14 electronic malls offering everything from cars and office equipment to brewery supplies and vitamins Deloitte & Touche[79]. In a separate study Deloitte & Touche Consulting found that 44% of PC owners (that subscribe to an on-line service provider) have made an on-line purchase in the last 12 months. When looking at the buying habits of young people they found that 77% of those consumers under the age of 25 were shopping on-line (Deloitte & Touche, 1996). However, despite the hype, commerce on the Internet has suffered from the lack of readily available and appropriate payment mechanisms. Today, payment is generally made via credit card but concerns over security have lead many users to rely on fax or

telephone for authorisation details. Furthermore, knowledge based services are currently inhibited through lack of clarity over IPR issues and inappropriate payment norms - what is needed is the capability to handle micro-transactions. Knudson et al.[80]

Says that traditional businesses, such as banking are under several fronts:

Low barriers to entry - challengers are appearing from all directions. Examples include the investment and leasing arms of car manufacturers, large retail organisations, other financial organisations such as building societies and insurance companies as well as totally new players who are 'farming' an existing brand name (e.g. Virgin). None of these examples carry the costs of a dedicated branch-banking network.

Poor management (misunderstanding) of modern financial instruments along with the mishandling of control and empowerment issues. Examples of failure include Herstatt Bank (Germany), Barings Bank, BCCI, Daiwa and various American Savings & Loans organisations.

Payment systems have traditionally been based on complex supply chains and processes. Modern communications capabilities allow new players to bypass the traditional system Business Week magazine noted, "Banking is essential to a modern economy, Banks are not", (quoted in Financial Times[81]. This statement is supported by a recent report from Booz Allen & Hamilton Warner[82]. BAH claim the Internet poses a very serious threat both to the customer base of the traditional banking oligopoly and to its profits. Their belief is that the Internet promises a revolution in retail banking of monumental proportions. High street banks as we know them, may largely disappear.

The unbundling of banking services will enable unfettered promiscuity of custom. Banks will lose their grip on the customer base. This will reverse the present position where customers are made to feel grateful to their bank for the services provided. Instead, the customer's financial profile will become the property of middlemen and software providers, with the result that banks will genuinely have to compete. In short, retail banking will become much more like wholesale banking.

Other threats exist in the form of new conceptions of electronic money and attempts to overturn the payment methods currently employed - CyberCash, DigiCash, First Virtual and NetBill. Others are experimenting with smart card technology where the user caries an electronic purse (Mondex).

Telephone banking was the first blow to the UK clearers and they responded by setting up their own telephone banking subsidiaries rather than changing their main operations. Internet banking is the next big challenge. Once the advantages of geographical proximity go, all brand loyalty and value falls away. This will further pressurise traditional marketing and supporting systems that collect information on customers.

Organisational Support Systems

Underpinning the activities of companies are their business processes and information support systems. A major development in computerised support systems is the advent of process support software that allows work to be routed (similar to a paper file) around the business. These products use a variety of methods to integrate with information systems, delivering the context for action to the appropriate user. Generally referred to as workflow software, there is still considerable confusion in the marketplace. The problem is that there are no consistent meanings for the terms used (workflow, process, task, activity, etc.).

There are a considerable number of products available (at the last count some 240) which are described by their vendors as workflow tools. Each product reflects the views on organisational behaviour of the developers, with vendors interpreting the term to suit their own needs. Some see workflow as a mechanism for providing better methods to control workers. Others see it as an opportunity to enable organisational learning, allowing workers to exercise their own judgement, responding to the requirements of the case in hand rather than following predefined paths of activity. In reality, most conceptions revolve around the routing of work from one user to another in a predefined fashion.

It is clear that the term workflow is no longer appropriate - 'work' does not necessarily flow that much Miers[83], The concept of work 'flowing' is just one aspect of the wider

problem of managing information related processes. A new conceptual framework was introduced to support an improved understanding of the issues affecting process support systems. This model is used within Process Product Watch (PPW) Reports[84] which provide detailed evaluations of process support systems. The model presented underpins the organisational support aspects of the electronic commerce definition of Workware.

For most commercial businesses the strategy making process means looking at your own market positioning - evaluating how to overtake others or protect an entrenched position in the value chain. For banks and financial services companies, that means coming to grips with the unfolding saga of electronic payment systems and managing customer relationships. Certainly, all enterprises should evaluate how their strategies for customer engagement transfer to cyberspace.

1.14 Future of Electronic Commerce

The future of electronic commerce is dependent on fast and reliable on-line access. It[85] is expected that mature versions of Internet commerce applications will depend largely on the use of public key certificates. These will enable secure e-mail communication between most leading-edge organisations, business-to-business electronic trade, and access and payment for Internet consumers. Smart cards will be well established in all industrialized countries for corporate security and secure Internet access. All new personal computers will include smart card readers and support the new computer/smart card interface. Fingerprint and voice recognition technology will be established in high-value, leading-edge applications. Strong cryptography will be widely adopted, supported by the relaxation of export controls on the dispersion of this technology. Increases in processing power will make it possible to use bulk encryption for confidentiality at high speeds over host-to-host links. Leading-edge organisations will have enterprise-wide trust infrastructures based on public key cryptography and digital certificates and trusted third-party agreements will proliferate.

The range and depth of applications will also continue to expand. By 2005, it is expected that most e-mail traffic will be secure at application and network level; most supply chains will trade electronically; some leading-edge organisations will have been re-engineered into virtual companies; consumer certificates will be in widespread use; smart cards will be in ubiquitous use worldwide for everything from Internet access and electronic commerce to ticketing in theatres and public transport; client personal computers and network computers will be marketed with built-in fingerprint scanners in the mouse or keyboard; and cryptography and the Internet trust model will be accepted facts. A workable framework for global trust infrastructure will begin to emerge, and trusted third-party licensing and data protection laws will have been harmonised internationally. There will be recognised policy standards for issuing or revoking certificates, and international laws on liability.

Mitchell.Levy[86] explains ten pridictions of e-commerce as:

1. While consumer-based security concerns continue to decrease, privacy concerns will increase leading companies for focus on the non-monetary forms of currency (time, attention & trust).
2. Companies will begin to recognize that the value-added activity begins after the customer hits 'submit order' and that Customer service will become the point of differentiation.
3. Movement of Electronic Commerce to a service industry rather than purely product or technology driven...Outsourcing Electronic Commerce functions becomes very popular.
4. More top-level executives will focus on and be responsible for Electronic Commerce.
5. Dramatic increase in access speeds and appliances (mobile devices, ATMs, home/office appliances, etc.) connecting to the Web and integrated into Electronic Commerce applications.
6. Continue growth of affinity groups (e.g. Chemdex, Metalsite, Rosettanet, etc.)
7. Continued price transparency with auctions and other real-time pricing vehicles...will see prices for scarce items increase and prices for commodities decrease.
8. SHOPPING: a) Wallets and "impulse buying" will take root, b) Price-driven buying: looking for the best deals will be a big play and c) Special Electronic Commerce function keys will appear on keyboards.
9. Will see a non US-based player dominating some Electroni Commerce space.
10. Essential companies will continue to demonstrate success with Electronic Commerce while small to medium enterprises (SME's) flock to the net.

The countries that are leading in this field are USA, European Union and Australia. Malaysia, Mixico, Singapore and India are among the countries that are striving hard to follow the leaders and evolve mechanisms and technologies of electronic commerce specific to their business environment. A number of others are yet to join the revolution[87].

At macrolevel, if one looks at the opportunities for India, "Outsourcing Software and IT Services" from USA and other advanced countries have emerged as one

of the means to reduce the cost today and in this regard, India has emerged as a preffered destination. Therefore, Indian Software Export Industry could target for a significant share of global e-business/e-commerce market in the years to come.

In the emerging digital economy, it would be necessary for Indian firms to follow the same online b2b practices as done by others in the world to be a stakeholder. E-commerce would give opportunity to Indian small and medium enterprises to project their capability globally and thus participate more proactively in such ventures. Many traditional sectors such as handicrafts, textiles, art, natural medicines which could not tap the global markets due to lack of marketing resources should find an ideal medium in Internet. Indian cultural heritage, monuments, temples, classical music etc. could be made known widely to the world and could be further leveraged in enhancing tourism. E- commerce is one IT tool that could do wonders to the Indian economy in many fields.

In Nasscom-Mckinsey study Indian IT strategy, these opportunities are covered under the broad sector of IT Services (E-commerce as "extended enterprise" applications) and E- businesses. As per this study, India has the potential to create e-business worth $1.5 billion by 2004 and around $10 billion by 2008 with opportunities in both b2b (ePSM, Commodity trading marketplaces and payment systems) and b2c arenas (connectivity, online retaining and portals/communities targeting NRIs).

Gartner Group forecasts worldwide B2B E-commerce to reach $7.29 Trillion in 2004. According the research from Forester Institute, the exchange of money across the Internet is will reach a skyrocketing figure.

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CHAPTER-TWO

THE CONCEPT OF BUSINESS VALUE AND MEASUREMENT

2.1 Meaning of Business Value[1].

The business value is derived from improving existing process within an organisation, improving product promotion through mass custamisation and one-to-one marketing and offering new direct sales channel for existing products, reducing the cost of some processes (e.g., information distribution), reducing the time market, improving customer service through automated service and round-the–clock operation, and finally improving the brand image, by offering electronic access to customers.

It also includes transforming the way companies deal with customers, by accumalating knowledge on their detailed preferences and buying habits, targeting them with specific offers, and generally dealing with them in a personalized one-to-one way. Through the early adoption of electronic commerce, organisation also learn to deal with these new technologies, the organizational transformation they imply and the new processes which need to be introduced.

When organistaion redefines the products, processes and business models using technology to fundamentally change the ways products are conceived, marketed, delivered and supported it is said to have derived the business value.

2.2 Measurement of Business Value[2]

The first idea that springs to mind is using a Web browser to buy something over the Internet. Ultimately, billions of dollars will change hands every year through this consumer model. Just linking your systems to partners' systems to smooth the business transactions between all parties involved does not necessarily mean your Electronic Commerce is actually providing any real value to your company in terms of saving money and improving business operations. Simply adding up the number of partners online and the number of transactions conducted does not always convince management that Electronic Commerce has added value to the company, or that Electronic Commerce enabling all the company's systems will necessarily pay for itself and add future value.

2.2.i A New Channel

Electronic Commerce is a new channel of business for most companies and due to this, there are no standard measurements business can use to accurately measure the value of their Electronic Commerce initiatives. To start with, companies should ignore any benchmarks from other organisations. Comparing business processes with other companies provides limited value, as management cannot compare their systems with another entity. Benchmarking should be done as a set of "before" and "after" measurements of the same process in the same value chain in the same company if they are to show what real value the Electronic Commerce project has brought. Using the same set of measurements for both benchmarks is critical if senior management is to be convinced of the value Electronic Commerce adds. This may require reconfiguring and redesigning the criteria to be able to accurately judge the impact of Electronic Commerce. The Electronic Commerce project should not encompass the entire enterprise from the start. Starting small is key if Electronic Commerce is to deliver value, as is making sure the measurement criteria are focussed on the specific industry and value chains being measured. Companies should take a specific process and value chain that requires human interaction between all the parties involved, as well as intersystem transactions as a first step. Once the first project is delivering value, it will be easier to Electronic Commerce enable the next value chain with optimised criteria and time frames.

2.2.ii Bottomline Value

Since senior management will have to have the final say about the effectiveness of Electronic Commerce, it is also imperative to measure the bottomline value the project adds. By its nature, Electronic Commerce is most successfully described as a business integration-enabling strategy in areas such as supply chain management. Electronic Commerce 's monetary value should therefore be measured as a percentage of these strategies' contributions to profitability and cash flow. Although the value to the business needs to be measured and experienced in the business processes themselves, an undervalued part of the whole Electronic Commerce strategy is often the value business partners gain or lose as a result of the project. It is not a matter of just getting data faster or more accurately, but the bottomline impact Electronic Commerce has as well. A company with various partners will not benefit if each partner insists on a different Electronic Commerce strategy and standards that are incompatible with the others. If business partners find no value in the project, it's given that they will not use the systems to their full ability, creating problems and even greater delays than old manual processes - not to mention the support issues involved. Some companies will simply have no choice, regardless of strategic and practical assessments. Several very large global companies have already mandated that they will only deal with suppliers via Electronic Commerce.

2.2.iii Competitive Advantage

Finally, competitive advantage is another critical measurement businesses forget in the rush to get themselves "online". To gain an advantage, companies need to create, not merely an Electronic Commerce project, but a platform that will allow them to easily integrate other proprietary applications into the platform and provide a value-added information delivery to partners. Successful Electronic Commerce implementations that have provided measurable business value have certain commonalities. They have changed business processes, standardised data types and definitions, agreed on Electronic Commerce interfaces (with a browser-based HTML, Java or XML interfaces becoming the norm), and modified their legacy applications. In the past, integrating Electronic

Commerce into an organisation has proved easier and projects have been more successful when run as part of a complete business strategy, as opposed to the natural temptation to relegate it to a technology-driven project. One caveat to consider: select an initial project that is not overly ambitious, and then go further. The benefit of the business approach is that the value will be defined in the planning stage, giving senior management all the business data they need to pledge their support to the changes in their own and partners' businesses.

2.3 Measurement of the Impact of Electronic Commerce[3]

Traditional macroeconomic methods and existing economic indicators may not apply to and cannot keep pace with the information economy's Internet speed, expanding markets, and changing industry structure. Thomas R. Spacek have described new capabilities, characteristics, classes of indicators that are being developed to measure, monitor, and forecast business activity within the emerging Internet-based economy at the global, country, industry segment, and individual company level. These are describe below

2.3.a. New Capabilities.
2.3.b. Characteristics of Measurements.
2.3.c. Classes of Indicators.

2.3.a. New Capabilities

The Internet has been growing very rapidly for a number of years. Two of the major driving forces for its current and projected future growth are productivity improvements for businesses and government agencies and electronic commerce -- both business-to-business and business-to-consumer. Electronic commerce is a very small part of many countries' economies but is growing rapidly. There is increasing demand for capabilities to measure electronic commerce and its impact on individual firms, industries, and the economy of individual countries and regions of the world. In the Internet electronic commerce world, many traditional ways of organizing and measuring economic activity simply do not work. For example organizing companies or products by Standard Industry Classification (SIC) codes or other systems in common use does not apply too much of the new digital economy. There are many tools and methods available where monitors are placed at individual web sites to measure parameters of interest such as the number of hits, the total number of unique visitors, how long users are connected to the site, what pages they are visiting, whether purchases are made, response time and performance of links within a site, etc. Some of the tools also provide analysis of those parameters to gain further insights into, e.g., customer-buying behavior. A firm using such tools may find them very useful in helping the firm make various business and technology decisions regarding its site, but, for the most part, the value is limited to that firm. Other capabilities exist where monitors are placed on a large sample of PCs most often in people's homes to measure parameters such as which sites are being visited most often

and exactly what the users are doing on those sites. Analyses of data from such tools are useful for such applications as helping advertisers decide where to place ads, providing inputs for establishing advertising rates for web sites, understanding what customers are doing and their purchase behavior across the sampled sites and by using statistical techniques across all sites, and thus to some degree measuring the impact of electronic commerce.

These later PC-based tools have several drawbacks, e.g., they may have sampling biases and may miss certain important segments of the buyer population, and e.g., purchases made from PCs at the workplace may have limited samples, if any. Hence there remain questions as to the accuracy of the results obtained from these tools. Some vendors in this category have faced severe criticism from individual web sites and from some members of the Internet advertising community for inaccurately reporting traffic on their sites, which may point to lack of sophisticated sampling and forecasting methodologies. An important advantage, however, of both of these types of tools is the detailed "click" data that is captured and made available for analysis.

In addition to web server-based and PC-based monitoring, other measurement methods include: software enabled in browsers, tracking capabilities embedded in software used by Internet advertising brokers, software embedded in routers, remote monitoring of web site performance, and information on electronic purchases collected by some credit card firms. Each method is suited for a particular application or set of applications, and each has its advantages and drawbacks

2.3.b. Measurement Characteristics

2.3.b.i. Large-Scale Monitoring of Internet Protocol (IP) Networks

Problems in monitoring often include scaling. That is, a methodology may successfully apply to a small network, but may not easily or practically extend to large networks nor to a country nor to the world. The methodology being developed here is based on statistical sampling techniques and will apply to an individual company's web site as well as to a large extranet, an industry, a state, a country or the world.

2.3.b.ii. Remote Non-Intrusive Monitoring Techniques

The methodology being developed will allow for the collection of many modeling parameters without needing to install a device on PCs nor in routers nor on web servers nor on data lines.

2.3.b.iii. Real-Time Estimates and Analysis

Internet statistics are often based upon surveys or monitoring devices that capture data for later analysis. The capabilities being developed will, for the most part, capture and analyze data in real-time. As we will see in an example below, real-time availability may produce new useful applications even in cases where similar data available months later (say, based on analysis of survey results) may have little value for the application.

2.3.b.iv. Innovative Statistical Techniques

The methodology being developed includes efficient sampling methods, algorithms, and accuracy estimates. Note that most Internet measurements today do not produce accuracy estimates. It is also important to note that samples can be designed from the set of all IP addresses available in the public Internet, hence making it possible to generate very accurate results.

2.3.c. Classes of Indicators

Prior to embarking on an effort to define and test indices and indicators of Internet electronic commerce, we had two examples which although not sufficient to be a proof of concept did give us optimism that we could produce indicators. The first was a study we became aware of (but unfortunately do not have all the details because they were proprietary) which was done several years ago by a major interexchange telephony carrier. The study showed that for individual firms, as business telephone traffic increased (decreased), sales increased (decreased). Also the correlation varied by industry, but there were similar patterns among firms within a given industry. Based upon these results, we speculated that increased traffic to an electronic commerce web site may indicate increased revenues. In a second example we looked at a six-month average host growth rate in Hong Kong from November 1996 through mid-1999 produced by NetSizer. This appeared to be a leading indicator by several months of the beginning (June 1997) of the country's economic downturn when compared to the annual GDP

growth rate. In the longer run as Internet growth stabilizes, traffic growth may be a better measure than host growth, but in countries with the Internet expanding very rapidly, host growth may be a reasonable proxy for traffic. What we perhaps were observing was investors, businesses, and entrepreneurs becoming more cautious and spending less on getting into or expanding their Internet businesses as the economic downturn progressed. Of course the host growth rate may not be a leading indicator, but perhaps appeared to be one because it can be produced in real-time whereas measures such as GDPs, etc. are often based on surveys which are typically analyzed and reported on months later. In any case both of these examples gave us some optimism that we could produce indicators. A key focus of the research upon which we have embarked is to define measures to monitor and track Internet electronic commerce; indices against which to measure performance improvement of a firm, industry, country, etc.; and indicators to predict performance changes. For some applications, traffic growth may itself be an indicator. Most of the measures, indices and indicators will likely include traffic or traffic growth as one of the components along other data either produced by NetSizer (e.g., host counts) or obtained elsewhere. Two of the several new classes of indicators we are pursing are described below.

2.3.c.i Indicators for the Digital Economy

These measures, indices, and indicators will focus on Internet economic activity at a high level. This new class of indicators will be analogous to indicators in the traditional economy such a country's GNP, Leading Economic Indicators, the number of telephone lines, the number of PCs, etc. An example of an indicator for a country might be a weighted linear combination of two or more of the following NetSizergenerated measures: electronic commerce traffic growth within the country, web server growth, growth of other types of hosts, Internet subscriber growth, and Internet traffic growth into and out of the country. These could possibly be combined with other data such as PC growth, growth in ASDL lines and cable modems, demographic information, etc. The uses of indicators in this class include: a) tracking and measuring the growth of Internet electronic commerce; b) measuring the impact of the Internet electronic commerce on the overall economy; and c) predicting economic changes based on Internet economic activity.

2.3.c.ii Leading Indicators of Corporate Business Activity

Indicators in this class will include Wall Street-like indices. These would be analogous to indices in the traditional economy such as the Dow Jones, Standard and Poors, and Heng Seng indices. This class of indicators will also include indicators for specific industries and for individual firms. Our current research is examining the relationship between traffic on the last network link between a router and an electronic commerce web site and revenue generation. The research is also attempting to isolate that portion of traffic that is attributable to revenue generation. The uses of indicators in this class include growth projections for a firm or portfolio, strategic planning, and competitive analysis.

2.3 Recent Researches on Business Values

Researcher have gone through whole literature survey but have not found any research on business values. While there is only academic literature on the economic payoffs from Internet based business initiatives, there is a rich body of studies in the domain of IT productivity and business value. Efforts to link productivity to IT investments in the past have been inconclusive, and hotly debated for over one decade. The systematic empirical demonstration of IT value, both at the firm and economy levels, has been hampered by measurement problems as well as the availability of reliable data. This led to the coining of the "IT Productivity Paradox", Roach[4], followed by an extensive stream of investigation by various IT researchers and economists. Barua and Mukhopadhyay[5] classify research in IT productivity and business value into two categories: microeconomic approach based on production functions, and non-microeconomic approach relying on process-oriented or resource-based perspectives.

The production economics approach to study IT impact focuses on the relationship between output measures (e.g., revenue, market share, and units produced), and production inputs such as IT and non-IT capital, and IT and non-IT labor. The early production economics based studies suggested IT had insignificant or no returns from IT investments (e.g., Roach[6], Baily and Chakrabarti[7], Loveman[8]). Subsequently, Brynjolfsson and Hitt[9], Lichtenberg[10], Lee and Barua[11] and others showed using different secondary data sets that IT indeed contribute to firm productivity, while acknowledging output and input measurement challenges.

Several non-microeconomic approaches have been suggested that mainly investigate how IT investments influence performance measures. These "process-oriented" approaches attempt to explain the process through which IT investments lead to improved operational and financial performance (e.g., Kauffman and Kriebel[12], Barua, Kriebel and Mukhopadhyay[13]). Barua, Kriebel and Mukhopadhyay developed a two-stage IT business value model that builds on the notion of "business value linkages". The two-stage model specifies that IT investments influence intermediate performance measures critical to a firm's success, which in turn relate to higher levels of performance measures such as revenues, return on assets, and market share. This two-stage IT business value model has

been refined and extended by researchers including Mukhopadhyay, Lerch and Mangal[14], Davamanirajan, Mukhopadhyay and Kriebel[15] and Rogawski and Adams[16].

Bharadwaj[17] proposes a theoretical link between IT capability and business performance, relying on resource-based view (RBV) literature in management. IT capability is defined as the ability of a firm to mobilize and deploy IT-based resources – IT infrastructure, human IT resources and IT-enabled intangibles – in conjunction with other organizational resources and capabilities. The basic premise of the model is that IT systems can be purchased or duplicated fairly easily. Thus IT investments alone cannot lead to superior performance, and firm level differences in various internal and external factors may affect the final performance outcome.

In this research, we address the measurement of business value within the domain of Internet enabled business initiatives. It is natural to ask if Internet related IT investments are different from investments in non-Internet technologies. The economic characteristics of the Internet and related technologies are significantly different from those of non-Internet IT applications Barua, Whinston and Yin[18]. The Internet provides a global network infrastructure that is shifting business models, strategies and processes at an unprecedented pace. In the past, firms used expensive, proprietary and costly-to-maintain systems to communicate highly restricted data with a few members in the value chain. Thus a firm had to deal with a fragmented customer and supplier base, and often incurred high costs to expand the customer base or to interact with new suppliers. The cost of implementation and subsequent maintenance severely hampered the adoption of such proprietary systems. This was true for all systems facing customers, suppliers and internal constituents. By contrast, Internet technologies have significantly different impacts on customer reach and richness of communication, Evans and Wurster[19]. Any customer with access to the Internet is able to gather information interactively regardless of time and location, (possibly) customize and order products/services, change orders dynamically, check order status, and seek online advice. More importantly, firms can extend site functionality, and offer new products and services without being constrained by physical customer interfaces. Such IT capabilities in the past were either nonexistent or prohibitively expensive to deploy. Even when firms adopted proprietary systems such as Electronic Data Interchange (EDI) to communicate with suppliers, the communication

was limited to the exchange of structured data. The Internet makes it possible to share customized and rich information on a real-time basis in an interactive environment using easily accessible, open networking technologies. Unlike EDI, the Internet makes it possible to support all phases of procurement including information search, negotiation and settlement. It also lends itself to relationship enhancing communications with suppliers. The above discussion suggests that a study of electronic business value has to develop appropriate measures of Internet based technologies, processes and performance. We need measures to capture characteristics of online systems and business processes that can help build and maintain customer and supplier relationships across the value chain.

To[20] the best of our knowledge, this is the first study to provide empirical evidence of the much-anticipated relationships between electronic business initiatives and benefits. We developed multiple new constructs related to Internet technologies, processes, business partner readiness and operational excellence. The constructs turned out to be highly reliable and are likely to be used and extended in future research. The results obtained from this exploratory study suggest that the overall effects of both customer and supplier excellence on financial measures are significantly positive.

Further, the study also validates the linkages between operational excellence and driver constructs related to Internet applications and business partner readiness. While the process constructs did not turn out to be key drivers of operational excellence, we believe that in most firms electronic business initiatives are still in their nascent stages; more coordination and learning are required within the value chain for simultaneous adoption of Internet based business practices by all partners. This study should provide a valuable starting point for such future investigations. While subject to the usual noise and inaccuracy that are likely to accompany survey-based data with self-reported dependent variables, the large data set deployed in this study appears to be consistent and reliable based on a set of checks conducted by the data collection agency and us.

Future research in this area should focus on potential complementarities between the driver constructs and between operational excellence measures. In order to maximize operational performance, firms need to invest or commit resources in a set of key drivers in a synergistic fashion. Investing in IT alone may not translate into operational

excellence as evident from reengineering literature of the last decade. Theoretically it can be argued that a complementary set of changes in business processes in the entire value chain, informational and transactional capabilities of IT facing customers and suppliers, and readiness of customers, suppliers, and trading partners is required. A body of research in IT business value incorporating the complementarity framework is emerging both using production function and process-based view. For example, Brynjolfsson and Hitt (1996) show that higher levels of IT usage is associated with organizational architecture such as incentives, decision rights and skills, and conclude that "organizational practices a re important determinants of IT productivity, and vice-versa." While it is beyond the scope of path-analytic modeling to handle complementary relationships, more generalized econometric techniques can be deployed to study the presence of complementarities in a business value model.

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CHAPTER-THREE

RESEARCH METHODOLOGY

3.1 Need for Research

Electronic commerce over the Internet is a new and fast-growing way of conducting business. Though only a few years old, it is rapidly developing into a major economic activity, and links up several companies with the global market in a way that geographical boundaries and location no longer pose hindrances to business transactions. The potential of this fast-growing form of transaction has become the focus of many governments, national statistical agencies, and international organisations and, in particular, business people who need to make well-informed decisions for their policies and investments on Electronic Commerce. In fact, Electronic Commerce is not something new but has existed for decades. Earlier forms of Electronic Commerce have been conducted through closed networks, e.g. internal networks (intranet), exclusive networks for use between a company and its business partners (extranets), mainly in the form of electronic data interchange (EDI) and electronic fund transfer (EFT) as well as private procurement networks. These networks allow for a high degree of security and reliability of business-to-business transactions. However, the high costs of development and maintenance of such networks have put them out of reach to many firms, in particular, small and medium-sized enterprises (SMEs). With the rapid developments in Internet, recent attention has been focused on Electronic Commerce conducted over the internet, and in particular, the extent of adoption of Electronic Commerce by SMEs and new companies made possible by the internet. This has given rise to the need for various measurement and methodological research issues.

The more need for research can be seen from the history of evolution of e-commerce as we seen that different stages have shown its importance that it took only four years to reach fifty million users. Further the three pillars of Electronic Commerce i.e., Electronic Infromation, Electronic Relationship, Electronic Transactions where research can be done. Apart from this there are other benefits like lowering purchasing cost, reduced inventory, lower cycle times, customer service, new sales opportunities, marketing costs, marketing communication, supplier and customer benefits, there are barriers like access to use and infrastructure, network convergence, local loop, security, certification, protection of privacy and personal data, consumer protection, taxation, paying electronically, there are different views and trust which can be customer-oriented view,

organisational oriented view, there are different application models and types of Electronic Commerce which help organisations in so many ways that needs research. The infrastructure of Electronic Commerce also plays an important role as to redesign the infrastructure of any organisation. The legal issues concerning of Electronic Commerce where to decide what law for what land in this global environment .The strategic challenges will collectively and individually contribute major changes in a way a company conduct its business. The importance, scope, features and components of business values also provide new agendas for need of research. The future of Electronic Commerce also predict that many countries are leading in this field to follow the mechanisms and technologies of Electronic Commerce specific to their business environment. All these aspects built an environment for need of research where scope is wide.

The[1] idea is that there is a life cycle for research needs which follows the pattern of growth of e-commerce markets: at an initial stage there is need for information on the enabling factors and barriers to e-commerce; at a more mature stage one should look for the intensity of e-commerce use to enable policy makers to address imbalances; at a later stage one would be able to measure the impact of e-commerce on the economy and society. The three broad areas for indicators are:

1. **E-commerce Readiness** - Included here are issues of preparing the technical, commercial and social infrastructures that are necessary to support e-commerce. It is essential for each country to be able to construct a statistical picture of the state of readiness of each infrastructure element to engage with e-commerce.

2. **E-commerce Intensity** - These issues relate to the state of e-commerce usage, volume, value and nature of the transactions. The statistical requirement is to profile who is exploiting e-commerce possibilities and who is not, and to identify leading sectors and applications.

3. **E-commerce Impact** - These issues relate to additionality (i.e. e-commerce goes beyond substitution effects and creates new value added) and multiplier effects. Statistics

are needed to evaluate whether and to what extent e-commerce makes some kind of difference in terms of efficiency and/or the creation of new sources of wealth.

Researcher have been/are being conducted in areas such as history of Electronic Commerce, pillars, benefits, barriers, views and trust, application models, infrastructure, legal issues, challenges and opportunities, impact on travel, retail, banking, finance but there is no research which has been conducted before to see the Impact of Electronic Commerce on Business Values emperically. Therefore an attempt has been made to fill this gap.

3.2 Objectives and Scope of Research

The main objective of this research is to study the Impact of Electronic Commerce on Business Value of Service Organisations. The other objectives that emerge from the main objective are is to see that:

- To what extent Electronic Commerce helped customers in collecting relevant information, customising products, differentiating product with that of competitors, opportunities for new products for product promotion.
- To what extent Electronic Commerce has been successful in using electronic catalog, added customers using new sales channel, added value in providing centralised information on all shopping aspects, understanding buyers behaviour online, supplemented existing distribution channel for new sales channel.
- To what extent Electronic Commerce helped in lowering the cost of distribution, reduced marketing, distribution, customer service costs as compared to traditional commerce, helped customers through quicker reporting for direct saving.
- To what extent Electronic Commerce helped in reducing time in delivering information, reduced time to distribute or receive a product, life cycle of some services, reduced overall time require to market your product services for time to market.
- To what extent Electronic Commerce enhanced customer service, built customer confidence and retention, providing insights on improvement areas in current products, feedback for the design of new product, influenced CRM (Customer Relationship management) as compared to traditional methods for customer service.
- To what extent Electronic Commerce helped in building brand image, successful as compared to non-electronic exercise of image building, presence of web page affirmed your brand image, differentiating your brand with that of competitors, relation to corporate image for brand image.
- To what extent Electronic Commerce helped company to experiment new product, services and processes, strategies for technologies, to adopt new technology according to customer's feedback, organisational structure in terms of

flexibility and delegation, achieving goals for technology learning and organisational laboratory.

- To what extent Electronic Commerce personals relationships between supplier and customer, recording every event of customer, understanding the segment of customers to be targeted, strategies to allow its customers to send relevant information, analysing the buying the pattern for customer relationship.
- To what extent Electronic Commerce helped for the new products to be created or innovated, create specific product based on needs, improving new product development, opportunity for mass customisation, features which matters most for new product capabilities.
- To what extent Electronic Commerce helped organisational structure for new business models to its customers, selling of existing products or services by adapting new business models, eliminating intermediaries, reaching the target customers, creating opportunities for customers through new business models.

Scope of research is limited to study the Impact of Electronic Commerce on Business Values emperically from the data collected through questionnaire and tested through various analysis techniques, which shows how Electronic Commerce can improve, transform or redefine current products, processes and business models. The research only deals with managerial aspects and not with any technical aspects of Electronic Commerce.

3.3 Literature Survey

Researcher has gone through around 256 articles from various web sites, papers, various journals, magazines and books which shows that there is no research which have been conducted before on The Impact of Electronic Commerce on Business Values.

The above references mainly deals with meaning and definitions, benefits, pillars, risks, trust, application, infrastructure, legal issues, challenges, future of Electronic Commerce, thus it is very much clear that there is no evidence related to research which we are conducting. There are articles on Impact of Electronic Commerce related to integrating electronic payment into the buying process, building a consumer marketplace, moving supply chains and products into the market space, the governance of electronic business, new intermediation, market, market structure, market behaviour, market performance, business models, market strategies and business value framework, prices, competition and competition policy, tax, trade policy, regulatory issues, employment issues, labour market policy, economy, ten ways electronic commerce affect the environment but not any study which shows the Impact of Electronic Commerce on Business Values .

Relevant literature, which the researcher has gone through, may be classified as follows:

For Electronic Commerce in all 87 articles have been studied which have defined and explained meaning, definitions, history, pillars, benefits, legal issues, challenges, infrastructure and future of Electronic Commerce in different ways. For example sites http://www.uow.edu.au, http://www.cisco.com,http;//www.higgens.freeserve.co.uk, http://www.cordis.lu, http://www.usc.edu, http://www.people.ne-mediaone.net. http://www.businesssoftware.com, http://www.enix.co.uk, http://www.polity.org.za. http://www.mit-gov-in, http://www.snad.ncsl.nist.gov., http://www.strategic.ic.gc.ca. http://www.hispeconline.com, http://www.ispo.be, http://www.nortelnetworks.com, http://www.wgains.com, http://www.enix.co.uk, http://www.ecnow.com, were found best sources for this part. The articles, books and research papers of Jaiswal, S. (2000), Kalakota, R. & Whinston, A.B.(2000), Bajaj, K.K. & Debjani, N. (2000), Minoli, D & Minoli, E.(1999), Greenstein, M. & Feinman, T.M. (2000), Wigand, Rolf.T. (1997), Schneider, G.P & Perry, J.T. (2000), Gummesson, E. (1994), McCarthy, E. J. (1981), Cronin, M.J. (1994), Waraker, A. (1996), Financial Times (1996), Sept 4, Warner, J. (1996), Miers, D. (1995-96), had a great coverage for this chapter. For details, please refer to page number 77-81 of chapter -1

For Business Values 20 articles explaining meaning, measurement, impact, and recent researches on Business Values were studied. For example sites like http://www.itweb.co.za, http://www. mail.utexas.edu, http://www.itweb.co.za, Akhter, J. (2000), Roach, S.S. (1997), Barua, A. & Mukhopdhyay, T. (2000), Baily, M.N. & Chakrabarti, A.K. (1988), Loveman, G.W.(1998), Bhardwaj, A.S. ((2000), explained this part comprehensively. For details, please refer to page number 95-96 of chapter- 2.

Around 60 articles explaining the impact, present models, case studies, survey reports of electronic commerce were studied. For example sites like http://www.cbs.nl, http://www2.computerworld.com, http://www.usc.edu/dept/annenberg/journal.html, http://www.ascusc.org/, http://www.oecd.org, http://www.msb.georgetown.edu. http//www.giic.org, http://riggins-gt.iac.gatech.edu, http://www.people.ne-mediaone.net. http://www.mhhe.com/business/mis/zwass/ecpaper.html, http://ecommerce.mit.edu, http://www.anu.edu.au/people/Roger. Clarke/EC/ResMeth.html, were found best sources. The research papers of Bloch, M., Pigneur, Y. & Segev, A. (1996), Jarvenpaa, S.L. & Todd, P.T. (1996-97), Martin, M.H. (1996), Guglielmo, C. (1998), Hoffman, D.L., Novak, T.P. & Chatterjee, P. (1996), Bakos, J.Y. & Brynjolfsson, E. (1997), Rayport, J.F. & Sviokla, J.J. (1994), Malone, T.W., Benjamin, R.I., & Yates J. (1987), Streeter, L. A. (1996), Benjamin, R. & Wigand, R. (1995), Lee, H.G. & Clark, T. (1996), Jones, K. (1998), Wigand R.T. and R.I. Benjamin (1996), Malone, T.W., Benjamin, R.I., & Yates J. (1987), Riggins, F. and Rhee, S. (1998), Coase, R.H. (1937), Malone, T.W., Benjamin, R.I., & Yates J. (1987), Hess, C.M. & Kemerer, C.F. (1994), Armstrong, L. (1998), Sarkar, M.B., Butler, B. & Steinfield, C. (1996), Ravi, D. & Reddy, M. Venugopal. (2001), Zwass, V. (1998), Clarke, R. (1993). Adam, N. R., Dogramaci, O. Gangopadhyay, A. and Yesha, Y (1999), provided a great account of Impact of Electronic Commerce. For details please see page number 190-193.

There are so many references, which have been repeated number of times for references, they are not mentioned again.

3.3.1 Conceptual Framework of Electronic Commerce[2]

The term "e-commerce", regardless of the word "commerce" built into it, has been attributed so many different meanings by different actors that the term cannot be used in a neutral way. For the purpose of this section the term "*e-commerce*" (in italics) will be used as a generic term. The purpose is to show that, in fact, most of the existing e-commerce definitions differ with respect to: (a) the activities or type of transactions included in the definition, and (b) the communication infrastructure on which these activities/transactions are carried on. The range of activities/transactions included in an *ecommerce* definition can be wider (e.g. include most of the different layers of economic activity such as collaborative design and engineering, commerce, transport, marketing, advertising, information services, settlements of accounts, government procurement, health, education, etc.) or narrower (e.g. only retailing or delivery occurring electronically). The communication infrastructure, in turn will be defined by two dimensions: applications and networks. It refers to all the possible applications (e.g. the Web, Electronic Data Interchange, Minitel, etc.) running over all the possible communication networks (e.g. open, closed, proprietary or non-proprietary networks).

Thus, existing *e-commerce* definitions can be seen as differing because of three key elements: (1) activities/transactions, (2) applications, (3) communication networks. For example some definition refer to only one activity (e.g. retailing or delivery occurring electronically), or to one activity occurring over a specific network (e.g. retailing occurring over open networks, or TCP/IP based networks), or, more narrowly, to one activity occurring over a particular application (e.g. Web or Internet retailing). In practice, by taking into account what type of activity over which network, one can think of different types of *e-commerce* definition. This also underlines that *e-commerce* is more than a technology or application; rather it denotes the application of information and communication technologies to the entire value chain of business processes conducted electronically. The interaction between "technology" and "business process" (or business activity) is key to understanding the impact that *e-commerce* is having on the nature of economic transactions, and in turn on the economy. At least one definition of *e-*commerce should reflect the issue of transformation of economic activities, or else *e-*

commerce would simply be the application of new information technologies to the commerce sector; also a definition should focus on certain technologies, otherwise e-commerce would not be different from electronic transactions that have existed for years, such as transactions carried out by fax, telephone, EDI etc. and would not justify the recent attention given to it by policy makers. It is the pervasiveness of electronic commerce all along the transactional structure, across the whole range of economic activities, and across the range of different economic actors that make it a unique application.

Fig 3.1: Showing E-Commerce and Broader Internet Application or Conceptual Framework

	Government	**Business**	**Consumer**
Government	**G2G** Eg-co-ordination	**G2B** Eg-information	**G2C** Eg-information
Business	**B2G** Eg-procurement	**B2B** Eg –E-com	**B2C** Eg –E-com
Consumer	**C2G** Eg-tax compliance	**C2B** Eg-price comparison	**C2C** Eg -auction market

3.3.2 Business Value of Electronic Commerce[3]

Here we describe the components of business value an organisation can derive from using electronic commerce showing how it can improve, transform or redefine current products, processes or business models, its potential for competitive advantage , its effect on intermediation in an industry. This can be seen in a paper by Bloch, Pigneur, and Segev where they have shown business value of electronic commerce a gaining advantage.

3.3.2.a. Product Promotion. Through a direct, information-rich and interactive contact with customers, Electronic Commerce can enhance the promotion of products.

3.3.2.b. New Sales Channel. Thanks to their direct reach to customers and their bi-directional nature in communicating information, Electronic Commerce systems represent a new sales channel for existing products.

3.3.2.c. Direct Savings. By using a public shared infrastructure such as the Internet and digitally transmitting and reusing information, Electronic Commerce systems can lower the cost of delivering information to customers.

3.3.2.d. Time to Market. Due to their instantaneous nature, Electronic Commerce systems allow a reduction of the cycle time associated with producing and delivering information and services.

3.3.2.e. Customer Service. Through intelligence built into systems and the extended availability of intelligent support systems, Electronic Commerce systems can enhance customer service.

3.3.2.f. Brand or Corporate Image. Electronic Commerce systems will become one of the components of a brand or corporate image, especially while targeting technology-friendly customer segment.

3.3.2.g. Technology Learning and Experimenting. Rapid progress in the area of Electronic Commerce will force companies to adapt quickly and offer them an opportunity to experiment with new products, services and processes.

3.3.2.h. Customer Relationships. Electronic Commerce systems will allow for more personalized relationships between suppliers and their customers, due to their ability to collect information on customer needs and behavior patterns.

3.3.2.i. New Product Capabilities. The information-based nature of the Electronic Commerce processes allows for new products to be created or existing products to be customized in innovative way.

3.3.2.j. New Business Models. Changing industry structures and Electronic Commerce systems allow for new business models based on the wide availability of information and its direct distribution to end-customers.

3.3.3 Impact of Electronic Commerce

Electronic Commerce is sharing business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks. Traditional Electronic Commerce, conducted with the use of information technologies centering on electronic data interchange (EDI) over proprietary value-added networks, is rapidly moving to the Internet. The Internet's World Wide Web has become the prime driver of contemporary Electronic Commerce, which has been vastly broadened and redefined by the use of the new medium. The field of e-commerce as entire industry is in its infancy. Here we discuss several nodal areas of Electronic Commerce impact on several activities.

These Impacts areas are:

3.3.3.a. Integrating Electronic Payment into the Buying Process.

3.3.3.b. Building a Consumer Marketplace.

3.3.3.c. Moving Supply Chains and Products into the Market space.

3.3.3.d. The Governance of Electronic Business.

3.3.3.e. New Intermediation.

3.3.3.f. Market.

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3.3.3.a. Integrating Electronic Payment into the Buying Process.

Consumer-oriented E-commerce is significantly lagging behind its business-to-business segment and current estimates place it at less than 10 percent of the total volume. The settlement phase of transacting on the Web is often pointed to as one of the limiting factors. The consumer should be able to pay for a purchase on the Web easily and with a perception of security. Although the overall shopping experience, product perceptions, and customer service on the Web today lead to a dissatisfaction of potential customers. Jarvenpaa & Todd[4] require attention of marketers and researchers; the problem of settlement is the one capable of a systemic solution. The most excitement is occasioned by the development of electronic cash, the informational equivalent of physical banknotes and coins. Electronic cash can offer such benefits as the anonymity of the buyer, global acceptance, and divisibility that can cost-effectively go beyond that of real cash in the case of so-called micropayments. Widespread use of electronic cash would have serious implications for the national banking systems and for the banks of issue, which would partly lose their seignorage profits and control of the quantity of money in circulation.

3.3.3.b. Building a Consumer Marketplace.

Some would argue that the main question of E-commerce today is how to convert Web surfers from browsers to consumers by creating an encompassing market space for information, services, and goods. The statistics of the phenomenal growth of the Internet use, with 29.2 million Web users in the United States as of the end of 1997 Commerce by numbers[5] and with 27.8 million unique visitors during January 1998 to the top-ranked site Yahoo! ("Top 20 sites,")[6], all of this accomplished within some four years, have to be counterbalanced by the modest statistics of the actual consumer buying. Yet, rapid growth is apparent in this sector as well. The approximate $132 million spent by the consumers in 1995 according to Martin[7] has reportedly grown into $1 billion spent during just the fourth quarter of 1997 according to Forrester Research Guglielmo[8], a figure that appears too high when placed in the context of other estimates. A large number of widely diverging, yet generally highly optimistic, forecasts of future growth exist Folley & Sutton[9]. The statistics and, far more so, projections are debatable; yet the growth trend is not. The consumer marketplace encompasses auction sites, reverse markets, and digital retail outlets. As we have said before, the auction approach is a successful means to

capitalize on the ubiquitous accessibility of the Internet medium. Along with other roles, an auction intermediary facilitates price discovery. Such sites as On Sale, auctioning computer and electronics equipment, and eBay, an auctioneer of collectibles, are relatively limited-size U.S.-based virtual auction houses. The two sites are built on two different business models. On Sale, a public company by now is a dealership-type of marketplace, which takes an active role in the ownership and delivery of goods, and customer service. This is reflected in the much higher net revenue as the percentage of sales than that of eBay, which simply provides the sites as a form of a digital agora, accessible to sellers and buyers, and realizes a commission of 1.5 to 5 percent of an item's price. The success of both sites points up the variety of approaches that can be taken in the Web-based consumer market. Auction houses have a potential to coalesce into large and multifaceted marketplaces that take on additional intermediary responsibilities in lowering the risk of the transacting parties by certifying the quality of goods and facilitating logistics.

Reverse markets are also based on the inexpensive ubiquity of the Internet medium and place the consumer in the driver seat. By broadcasting the need over the Internet, the prospective buyer of a product, a service (or a job, though ceasing to be a consumer in this relationship) is able to increase the consumer's surplus by extracting more favorable offers than those available publicly. A number of facilitators of reverse markets provide "wanted" sites. Several approaches have been identified within the general business model of Web-based digital retailing at fixed prices (as opposed to creating marketplaces that include price discovery). These on-line retailing outlets have been classified by Hoffman, Novak & Chatterjee[10] into (1) on-line storefronts or catalogs actually selling products or just establishing awareness of them, (2) content sites providing information and support, and (3) Web traffic control sites, such as malls and search engines. Westland & Au[11] classify the digital retailing approaches into catalog sites, bundling outlets, and virtual-reality storefronts. The bundling and virtual reality approaches may be considered of particular promise in experimenting with Web retailing. Theoretical work indicates that the bundling of goods is attractive for the goods of low marginal cost, with uncorrelated demand, and of approximately equal consumer valuation, with information goods (such as software) being a prime example Bakos & Brynjolfsson[12]. Bundling is

seen also promising for such goods as flower arrangements and gifts, where the consumer can conveniently limit the extent of necessary decision-making and the vendor can substitute products at will. In a kiosk-based experiment, Westland and Au (1997-98) find that the additional time necessary to interact with a virtual-reality storefront does not result in a greater consumer spending.

Spiller and Lohse[13] further classify empirically the catalog-type on-line sites actually available on the Web into five categories, summarized in Table. Note that several categories of digital retailers include on their sites what we call bonding features, which are expected to motivate repeated visits. Such features include product-related webzines, lotteries, and tips. These researchers find that digital retailing outlets offer limited product selection, few service features, and poor interfaces. As a confirmation of these perceptions, consumers find offering lists to be shallow and are also concerned about the performance and personal risks, such as payment-related security and privacy Jarvenpaa & Todd[14].

Fig 3.2:Showing Empirical Classification of Catalog-Type Digital Retailing Strategies (modified from Spiller & Lohse, 1997-98).

Strategy	Main Features	Examples
Superstore	Large Catalog Size Navigation Tools Bonding Features Extensive Information And Hand-Holding	L.L. Bean Online Sports
Promotional Store	Limited Product Range Extensive Company Information Bonding Features Community-Oriented Information	AWEAR Cheyenne Outfitters
Plain Sales Catalog	Medium-Size Or Large Catalog Large Images And Thumbnails	Milano First Lady
One-Page Catalog	Limited Catalog Size Product-Browse Function	Alaska Mountaineering Close To You
Product Listing	Medium-Size Catalog Small Product Images Few Hierarchical Levels	Rocky Mountain Outfitters Dance Supplies

Digital retailing has low entry thresholds at its lower end. Claims are made that multinational corporations may find themselves challenged on the Web by small upstarts and it is suggested that they need to review their business models Quelch & Klein, 1996;

Ghosh[15]. However, the cost to build an "aggressive" Web site, that is, a site that is interactive, transactional, and dynamic, is estimated at more than $1 million Commerce by numbers[16]. It is to be expected that the usual advantages of scale, scope, and existing brand will translate into Web retailing advantages when consumer-oriented E-commerce matures.

In the case of digital products, such as software, music, or multimedia, the Internet plays the role of distribution medium. A number of firms, including Cyber media, Test-Drive, and Tuneup.com, market software over the Internet, for example. Worth watching is the future of renamed Egghead.com, which under competitive pressures has decided to move its software retailing business from the brick-and-mortar outlets of limited size to the Internet in September 1997, with encouraging initial results. The range of digital products will vastly expand with the growth of E-commerce, with many new products emerging, for example, as symbolic tokens replacing hard goods Choi, Stahl & Whinston[17].

The potential in the expansion of the Internet-based consumer marketplace can be seen in experimentation going beyond the facilitation of consumer search and order taking. Building demand for the products, customizing products to the individual requirements, and developing lasting relationships between the vendor and the customer are the long-term objectives of Web sites. Specifically, stimulating sites can build demand for products, regardless of the ultimate manner of purchase. The interactivity of the medium gives a vast opportunity to customize, and thus engage in one-to-one marketing at relatively low incremental costs. If it appears unlikely that one would purchase a pair of shoes over the Internet, it is far more likely that one would if offered a customized product, based on the measurements transmitted over the network, such as the services currently available in some brick-and-mortar outlets.

The sites can be used to build lasting relationships with individuals, and thus developing brands. Of particular importance at this stage of the development of consumer-oriented E-commerce are community-building features of Web sites. These features attract an individual to a community of "birds of a feather," along demographic, interest, or even affliction (that may be alleviated) lines. Community sites attract voluminous traffic by

committed members and serve for them as the portal to the Web, making such sites highly attractive to advertisers.

3.3.3.c. Moving Supply Chains and Products into the Market space.

It is recognized that the networked infrastructure offers new opportunities for adding value by moving the stages of corporate value chains into the realm of information processing, saving money and time in the process Rayport & Sviokla[18]. We are witnessing the virtualization of value-chain segments, and, in the future, perhaps also of an increasing number of products. Business processes can be moved into the virtual, informational value chains, be they paperless transaction processing or electronic prototyping. The development of Boeing 777 based on virtual prototyping is probably the best known example. Rapid prototyping and rapid manufacturing technologies move the electronic model of a product directly from the computer-aided design (CAD) file into the machine that builds up a final, physical, prototype – or the final product - layer by layer, or powdered particle by powdered particle Bylinsky[19]. A virtual-reality based system for developing customized clothes, called Virtuosi, affords three-dimensional viewing and manipulation of fashion designs over the Web; voice-controlled mannequins demonstrate the clothes on the virtual runway in this experimental system Gray[20]. Indeed, a computer hardware design can be sent over the Web, when field programmable gate arrays are used Mangione-Smith[21].

This virtualization of products and processes is only at its origins and we may expect very significant development and efficiencies to derive from it. As they move from the purely informational to the collaborative use, corporate intranets can serve as vehicles for these virtual elements of value chains. Corporate extranets, open to business partners, suppliers, and customers can become secured extensions of the Internet in the interorganizational market space networks.

What goods and services can be converted to information that can be moved around and traded over the electronic marketplace? Rayport and Sviokla offer an example of the answering machine (1995). Cash is another example of a good that can be virtualized (a special kind of good that it is), video-cassettes are another such good, retail services are already delivered over the Web instead of in physical stores, and many personal

computers may be converted to appropriate over-the-network services. After all, a network computer is just such an attempt.

3.3.3.d. The Governance of Electronic Business.

Our understanding of a firm as a monolith has been problematized by Coase[22] milestone paper. Transaction cost economics that arose from this work helps us see the boundary of the firm as defined by the equilibrium between the advantages of the lower transaction costs of internal production on the one hand, and the lower agency costs (such as the costs of management) and economies of scale and scope of outside procurement on the other Williamson[23]. In other words, the costs of conducting marketplace transactions, i.e., information seeking, negotiating the terms, and settlement, define to a large extent what a firm will buy, instead of making it. Since these coordination costs are lowered in E-commerce, a general agreement exists (following the analysis by Malone, Benjamin & Yates[24] that more outsourcing - buying rather than making in-house - will take place. There is a considerable evidence that the use of information technologies is indeed associated with the emergence of small firms as the result of outsourcing of non-core activities Brynjolfsson et al[25]. Going beyond the "boundaries-of-the-firm" analysis, the electronic market suggests that the development of interorganizational systems based on telecommunications networks will move the governance towards the market end of the spectrum, with increased transaction-oriented buying from multiple suppliers. Yet the "move-to-the-middle" hypothesis by Clemons, Reddi & Row[26] postulates that the outsourcing will go only as far as long-term collaboration with a limited number of suppliers. Likewise, Bakos & Brynjolfsson argue that the consideration of coordination costs needs to be combined with the incentives for no contractible investments that suppliers need to make to maintain a relationship with a buyer. These relationship-specific investments have to be made to ensure, for example, the appropriate quality control, the implementation of information-sharing systems, and the modification of business processes. This consideration leads the authors to postulate the "move to the middle" as well. The evidence available at this time tends to support the second hypothesis. For example, a study of computerized loan-origination systems found no move to the market Hess & Kemerer[27]. A study of the effects of the French Teletel system, whose Minitel terminals are a part of the landscape in that country (40 percent of

non-retired population has access) found stable customer-supplier relationships as a result Streeter et al[28]. However, new E-commerce relies on tools that are radically different from, for example, the French Teletel (whose technology is outdated) and the developments surrounding the Internet (e.g., open-EDI that would foster a transactional approach to the marketplace) are certain to lead to further analyses of the issue.

Within the market governance, profound changes can be expected. For example, the global reach and the low access cost of the Internet can be expected to promote the growth of auction markets[4]. Electronic auction companies that are able to tap into an enthusiastic user community are almost instantaneously successful. Reverse markets, where willing buyers seek out sellers, are expanding as well.

3.3.3.e. New intermediation.

An argument is being commonly advanced that the greater reliance on the open telecommunications networks for doing business will lead to disinter mediation: the disappearing role of an intermediary, such as a dealer or a broker. Indeed, a perceptible pressure can be felt on the role of car dealers Armstrong[29], for example. Electronic commodity and stock exchanges are being created, which will squeeze out some intermediaries to the trade, as it has happened at the London Stock Exchange or at the Swiss Electronic Exchange. Removing intermediaries from a supply chain can result in significant economies, with much of the savings competed away and returned as a part of consumer surplus Benjamin & Wigand[30].

Powerful social and organizational barriers counteract many of these developments Lee & Clark[31]. Beyond that, intermediaries do play an important economic role in business exchanges by limiting the risk of the trading parties, by creating economies of scale and scope, and by facilitating transactions. The latter role includes the assistance in the search for a trading partner, in negotiation (or price discovery in auction markets), and settlement. It may be even argued that the role of intermediaries will be reinforced in E-commerce Sarkar, Butler & Steinfield[32]

New types of electronic intermediaries (so-called cybermediaries) can become valuable. They can facilitate product search, evaluation, and distribution in the form of virtual malls or on-line auctioneers. Buyer search costs are an important factor in the market

behavior and in the efficiency of allocation Bakos[33] and intermediation may be necessary for products of more complex description. New E-commerce has given rise to a new category of Web-based niche intermediaries, which are able to create a business model by reducing search costs in industry-specific marketplaces. Real bid has created a site (http://www.realbid.com) that brings together the buyers and sellers of commercial real estate Jones[34]. The firm attracts to the site with e-mail notices the potential buyers identified with its growing database. The firm's offering consists in removing the need for the buyer to study multiple several-hundred page long proposals to find likely purchase candidates. In another industry, Cattle Offerings Worldwide posts on its site the pedigree and genetic traits of cattle embryos and lets cattle buyers bid on them. Industry segments with widely dispersed sellers and buyers, and complex offerings that lend them to simplification with a searchable database are promising targets for this intermediation.

Quality certification plays a crucial role in the success of the AUCNET, the electronic auction house for used cars in Japan (Lee, 1998). AUCNET is able to extract on the average higher prices in its electronic auctions than the traditional auction houses in that country are able to do. This can be accounted for by the avoidance of the need to transport the car to an auction, with the lower transaction costs and wider reach thus attracting better cars on the seller side, and the local availability of cars producing savings for buyers. The virtuous spiral attracts ever higher-quality cars, naturally commanding higher prices.

New intermediaries can provide packaging and enhancement of information-based goods, for example, by delivering customized targeted multimedia information packages, with use-based payments to the holders of intellectual property rights, and with the access to the authors as a premium service. Suppliers receive the efficiency of a single payment; customers save on search costs, and get a more focused and comprehensive product. Intermediaries can track the copyrights and licensing payments, for example, enforcing site-license agreements. If in the future persistent software copies will not need to be made for many products, which will be simply downloaded for each use, appropriate billing can be provided by an intermediary. Intermediaries can also handle support services and updating of information-based products. At the same time, those traditional

publishers and resellers of information-based products, which cease to provide value in the new constellation, may indeed be disinter mediated.

The principal expected impacts of E-commerce on distribution channels have been summarized in Table. The table allocates the factor to the channel's actor where the impact may be expected to be felt most. For example, although the size of both the seller and the buyer is not directly transparent on the Internet, it is the partly opaque size of the seller that has the greatest effect on the course of a transaction. Notable is the price pressure on the sellers, which emerges from the reduced buyer search costs Bakos[35]. All the channel impacts listed in the table require further study.

Fig 3.3: Showing Expected Principal Channel Impacts of E-commerce

Sellers	Intermediaries	Buyers
Partly Opaque Firm Size	By Pass Possibility	Possibility of Enacting Reverse Markets
Increased Price Competition	Traditional Ones May be Replaced by Cybermediaries	Reduced Search Costs
Price Discrimination Possible	Increased Role in Price Discovery Possible	Increased Risks
Rich Product Description May be Needed	May be Material as Third-Party Guarantors	Network Effect (Increased Benefit with Increased Number of Sellers)
Reduced Search Costs in Finding Buyers		
Observable and Measurable Buyer Behavior		
Product Quality And Settlement Terms May Have to be Independently Certified		
Goods Movement and Storage Costs May be Reduced		
Network Effect (Increased Benefit With Increased Number of Buyers)		

The revenue stream extracted by the new intermediary will depend on the value added by its activities; this value added may in turn be hypothesized to correlate with the level in

the framework of Table that the intermediary operates on, with higher-level products and services yielding higher margins.

3.3.3.f. Market

The recent advent of World Wide Web has changed the traditional marketing paradigm worldwide. The general notion of the current literatures available on the impact of e-commerce is converging towards accepting the market efficiency hypothesis. In the case of financial market, it is efficient if expectations in the markets are equal to the optimal forecast using all available information. In a non-financial market, an efficient market is created when it is easy for consumers to fully understand a product and when they have the ability to compare product prices in order to make optimized buying decisions. Again, the users' decision is a function of available information. Using this framework, KPMG (1999) shows that with e-commerce, cost associated with information will decrease because with Internet technology, consumers will be able to access information to identify products, prices, vendors and payment scheme. It is highly probable to create an efficient market for mass-produced consumer products under the assumptions of - consumers must have true intelligent agents, network trust and secure payment schemes. In short, market imperfection due to lack of access to market information is being reversed, i.e. Market participants are overloaded with information in an e-market environment.

3.3.3.g. Market Structure

The major dimensions of market structure are, competition and extent of concentration, barriers to entry, buyer and seller relationship and product differentiation. The first and obvious impact of this technology is the change in the size of market, i.e. with Internet; e-commerce is rapidly expanding into fast-moving, open global market with ever-increasing number of participants. The liberalisation of the telecommunications sector and innovations has greatly expanded the volume and capacity of communications (optic fiber, digital subscriber line technologies, satellites). As mentioned above, the Internet community will reach 10% of the world population in the early millennium and the rate of growth is exponential in nature.

The opening of the world market space online cause barriers to entry to lessen significantly both buyers and sellers. In the early stage of Internet - marketing, most transactions were custom-made, complex, expensive and the province of large firms. Today, with a small capital base, anyone or firm can become a "trader" and reach millions of consumers worldwide. On the supply side, business-to-business transactions have transformed from known parties to a complex web of commercial activities, which involve a vast number of individuals who may never meet. On the demand side, there is a critical mass of consumers participating in a global online marketplace.

The barriers to entry may not be that low, as it seems. Ease of access is a multi dimensional construct, which include high-speed access (the bandwidth problem), ease of finding a service provider, the diffusion of the computer hardware/software modem bundle into the consumers' home. The secondary barriers are ease of use, price and risk including such as privacy and security.

Under the traditional marketing system, the buyer-relationship is frequently distorted by market imperfection particularly in terms of information flow. The bargaining position is determined by market power which is directly a function of market information. In terms of buyer and seller relationship, internet marketing results in a personalised relationship between suppliers and their customers, due to their ability to collect information on customer needs and behavioral patterns Bloch et.al[36]. In the global information overload community, demand is scarce in comparison to supply Rayport and Sviokla)[37]. Hence there is a shift from supply side to demand side orientation.
E marketing displaces, restructures and redefines the role of intermediaries (and hence creates a new form of intermediaries). The traditional intermediaries have to provide infrastructure such as sales network (physical places such as shops, specialised personnel etc.) and managing complexity of handling consumer requests. One of the major consequences of e-commerce is the "disintermediation" or displacement or bypassing the middlemen through the user's ability to connect directly to the source. It has been shown that it has a serious ramifications for middlemen employed as agents, commission agents, stockbrokers, insurance agents or travel agents. These intermediaries as well as many others could be possible phased out as e-commerce becomes more prevalent. These intermediaries will no longer be needed because the monopoly on information that they

currently hold will no longer is meaningful because the Internet will provide universal access and connectivity.

Another new phenomenon in the market is the emergence of new "cybermediaries". The real form, function and definition of the cybermediary is still ambiguous but the circumstances that lead to their existence are clear. These circumstances are: (a) the end user are able to connect directly to the source and hence results in disintermediation, (b) the reversal in directionality of electronic communications - i.e. Movement of access information has changed from "the center to user direction" to "end-user to the center direction". Hence, consumers have stronger bargaining power in the market. (c) The information overload creates new channels of knowledge diffusion and human interactivity. OECD (1998) identifies this new "cybermediary" as navigational tools, software that aids the user locating the information that is relevant to them. Examples of these are Yahoo, Lycos, Magellan and other reference services that allow users to search for Web documents in their databases. Mitra (1995) define this new breed of middlemen as simply "organisation that perform the mediating tasks in the world of electronic marketing". Forrester Research (1999) classifies these groups into three categories: aggregators, auctions, and exchanges.

Competition in the e-market is no longer centers on the traditional 4Ps idiom but will be more on technology standards. The e-commerce firm competes on technology standard. For instance in the computer and multimedia industries, Novell has become a standard for local area networks while Netscape is trying to build a platform for electronic commerce. Second, firms increasingly compete on acquiring customer information. In fact in customer websites, the platform is shaped around detailed customer information. Such information is used to find new customers more efficiently, improve products and services or tailor them to individual needs and build loyalty. With competition centers on "information content or quality" instead of prices or quantities, problems of asymmetric information and asymmetric access to the electronic link will become more prevalent.

3.3.3.h Market Behaviour

Structural characteristics of a market determine its behaviour. The low barriers to entry characteristic of the e-market or its openness has encouraged firms to allow their business partners and consumers unparallel access to their inner workings, databases and personnel. This has led to a shift in the role consumers, who are increasingly implicated as partners in product design and creation. In short, in the e-market, product decision is made with a direct participation (on-line) from the customers.

Most literature cites reduction in transaction cost as one of the major events that reshapes how firms restructure and compete between and within themselves. Wigand and Benjamin[38] utilizes the transaction cost theory to derive and explain how transaction costs are greatly reduced in e marketing. Economic theory asserts that firms will choose transactions that economize on coordination costs. With information technology, firms enjoy lower cost of coordination. Matching buyers demand or specification is made easier with electronic communication. Under such a situation it is expected that firms will continue to find incentives to coordinate their activities electronically. Often, this coordination takes the form of single-source electronic sales channels (one supplier and many purchasers coordinated through hierarchical transactions) or electronic markets Malone et al[39]. It has been estimated that distribution expenses constitute nearly 65% of the cost of consumer products. If in a networked economy, these distribution costs could be avoided. Hence, it is reasonable to assume that there could be substantial savings for consumers. Physical distribution costs will be minimized in two ways. Firstly, "close proximity" or direct connection of supplier and customer bypasses numerous unnecessary intermediaries, hence minimizing service charges to these institution. Secondly, cost of inventories are greatly reduced as the faster an input can be ordered and delivered, the less the need for a large inventory. Besides the ability to forecast demand more accurately allows suppliers to adopt "just in time" inventory system. The change in transaction cost in turn affects a firm cost structure of the value added chain.

3.3.3.i Market Performance

The interactive online environment and intangible nature of many products sold online are likely to mean that e-commerce merchants will employ a variety of pricing schemes. The most common is differential pricing. For business to consumer segment, supplier can compile information about consumers' buying habit, which allow segmentation of the market and make it possible for supplier to charge different price to different consumers for the same product to reduce the consumer surplus.

The translation of lower transaction cost into lower prices is still not very evidently clear. Many observers predict that electronic commerce will result in very efficient competition that will cause prices to drop and the balance of power to shift from producers to consumers. This has only occurred for a few selected products such as commissions for online stock trading.

E-marketing results in the shifting of some marketing cost to the consumers. Some portion of the reduction in firms' cost can be attributed to the shifting of costs formerly borne by the firm to the customer in the form of self survive. For example, customers are now expected to learn about the product, answer their own customer-support question and pay for shipmen t of products.

There is evidence that firms and establishments adopting new organizational structures have stronger and more productive external linkages with their customers and their suppliers of inputs and services Canada[40]. The combination of streamlined business processes, flat organizational hierarchy and continuous training and skill acquisition constitutes a favorable environment for innovation and improved productivity.

3.3.3.j Business Models[41]

Internet commerce constitutes the logical extension of firms' business models and simply accentuates some of their characteristics. In others, Internet commerce can mean the adoption of new business models that replace or complement existing ones. In all cases, electronic commerce creates new opportunities and challenges for market participants and offers the possibility of new models for organising production and transacting business. E-commerce thus offers intermodality in conducting commercial transactions and complementarily in business models; it provides an evolving paradigm, which can be

adapted to the needs of different firms in different contexts. An example of potential business model "enforcement" concerns Dell and Compaq as suppliers of computer equipment to General Electric (GE) (Ghosh, 1998). GE is setting up a system of Internet bidding and expects to purchase almost entirely over a Web-based bidding system in five years. At present, Dell sells computers directly to customers and expects to handle half of its business over the Internet by the year 2000; Compaq, instead, sells through distributors. It appears likely that Dell's strategy is forcing competitors in the computer industry to develop Internet channels of their own. Early adopters are beginning to emerge in other industries, such as auto retailing (General Motors and Auto-By-Tel) and trade publishing (Cahners and VerticalNet). New intermediaries in personal financial services are likely to require the unbundling of retail banking's integrated business system. Some intermediaries will specialise in creating and managing customer relationships, others in developing new products, and still others in providing back-office processing services and support (McKinsey, 1997). Companies such as Compaq will have to weigh the importance of protecting existing relationships, which account for most of their current revenue, against the advantages of establishing future strategic positions and revenue streams. Although early adopters may be in a position to define new business models, in which case the impact on business-to-business relations could be large, the process is not so simple. It would be fatal for firms to try to adjust business models to technologies unless there is a clearly defined strategic rationale for doing so. Companies that stand to lose margin to others currently provide real value to customers in the form of merchandising skills (which Ingram Micro does not have but CompUSA does), logistics expertise (which CompUSA does not have but UPS does), and information management (which CNET can do better than Apple) (Ghosh, 1998). One interesting case concerns IBM, which in 1996 launched Informat, an electronic-content delivery initiative, and World Avenue, a cyberspace mall (Ghosh, 1998). IBM thought it could use its computer network to deliver content and challenge the physical distribution chain, but it soon realized that it lacked the editorial and circulation skills of publishers and the merchandising and advertising skills of retailers. As a result, both initiatives were abandoned in the following year. In the case of business-to-consumer electronic commerce, which has not yet reached critical mass, it may be very risky for a company to bypass distributors and to have to weigh the gain of a few Internet customers against the

loss of a large number of traditional ones. The degree to which producers are able to impose their desired channels depends in fact on various factors – *e.g.* institutional, social, subjective – and a variety of path dependencies. It would be interesting to know in which sectors early adopters are most likely to enforce their business models and where conflicts involving transaction channels are most likely to occur. It is possible that enforcement of new business models might be more frequent in industries where switching costs are low or where costs are lowered by adoption of information and communication technologies.

3.3.3.k Market Strategies and Business Value Framework[42]

We presents a framework detailing the value of electronic commerce, especially the World-Wide-Web component (Web) of the Internet, for commercial organizations dealing with end-customers. Making money from direct sales is certainly the first way of getting value out of electronic commerce. Nevertheless, there are many others. The following table describes the components of that business value:

Fig3.4: Showing the Organisation Source of Business Value

Improve It	-Product Promotion. -New Sales Channel. -Direct Saving. - Time to Market. - Customer Service. - Brand Image.
Transform It	- Technological and Organisation Learning - Customer Service
Redefine It	- New Product Capabilities - New Business Models

The Components of the Business Value of Electronic Commerce

Our three "super-categories", improving, transforming and redefining the organization measure the amount of change in the global business model of an organization and the impact in terms of business results. Transforming an organization requires more creativity, more work, an additional level of risk and a different timeline than simply improving it. Obviously, the expected rewards match the additional burden.

3.3.3.k.i. Product Promotion

Through a direct, information-rich and interactive contact with customers, electronic commerce can enhance the promotion of products.

The first use of electronic commerce is to provide product information to customers, through on-line electronic brochures or buying guides. This can be seen as an additional marketing channel, allowing to reach a maximum number of customers. The advantages of electronic commerce as a way to deliver product information is its availability anytime, anywhere, provided the customer has the right infrastructure (e.g. PC, modem, online service) to access this information. But using an electronic medium also allows for interactivity and customization. Different ways to customize the advertising content, based on the customer profile or input, are to change the content description (simple or complex), display only a range a products which are relevant to the particular customer, change the price (e.g. discount for club members), allow for new functionalities in some cases (e.g. coupon available only in certain conditions) or change the path used to navigate in the service.

For instance, an electronic supermarket could provide different graphical user interfaces for kids, teenagers or housewives, with a look appealing to each of these segments. The advertisements appearing on the pages would also be different, with toys for the kids, music for the teens and jewelry for the housewives. This is coherent with trends in marketing, such as micro-marketing or one-to-one marketing which try and target each consumer with a specific message, according to his needs and desires.

Another good example is Hewlett-Packard and its reference guide to buying a printer; the system asks the customer to identify his/her needs (e.g. price range, need for color, etc.) and presents a customized version of the catalog, selecting only the printer models which the stated needs. In the service industry, Bank of America enables the customization of its "home page" on the Web, allowing the customer to bundle all the information services the bank provides in one convenient, easy to access page.

In a world with products being increasingly harder to differentiate, shrinking life cycles, an abundance of traditional media messages and customers having too little time, electronic commerce offers an opportunity for new promotion strategies, enhancing the

branding of products. As such, the quality of the "advertisement" is the primary value in product promotion.

3.3.3.k.ii. New Sales Channel

Thanks to their direct reach to customers and their bi-directional nature in communicating information, electronic commerce systems represent a new sales channel for existing products.

Considering electronic commerce, and in particular the World-Wide-Web, as a sales channel makes sense for two kinds of products:

1. physical products, sometimes also sold in conventional stores, which can be advertised and/or ordered on-line, such as computer hardware or wine
2. products which can additionally be delivered over the electronic commerce medium, such as information or software.

Examples of the first type are the so-called electronic catalogs such as the Internet Shopping Network, selling all sorts of electronic and computer related goods, selling wine and food products. These catalogs offer information on the products, support on-line ordering and payment, and sometimes-online customer service.

Electronic commerce strategies are of primary value in markets where information is of significant added value to the products being bought, rather than in commodity markets. For instance, in the wine industry, information on the winery, the type and quality of the wine, or the food it goes well with are of significant value to customers, and usually hard to get through the traditional sales channel (e.g. supermarkets, liquor stores, etc.) Centralizing this information digitally is therefore of significant value for customers.

The right packaging of information supporting the buyer's decision can also be a significant advantage. For instance in the case of Peapod, an "online grocery" selling traditional supermarket products through a computer interface, the ability to store shopping lists, recall them and modifying them significantly decreases the time a customer needs to do his shopping, therefore adding to the perceived value for the service. Similarly, the ability of the shopping software to automatically propose a substitute item with a reduced-price or to offer a coupon adds value by reducing the final

bill. These features are only possible when all the information used in the purchase is digitally available and processed.

In the case of information products, the electronic commerce medium actually becomes the delivery medium. As such, an electronic newspaper does not use paper anymore and can be fully delivered digitally. In some cases, (for instance, a service reporting on the computer industry), there is actually no paper version of the service. In another case, , a company selling software, currently sells more than 300 packages which can be delivered digitally and used literally minutes after buying them.

By extending the notion of selling "informated" products, we see new product categories emerging. For instance, referred to four ways of making money on the Web, the two last ones being new form of products:

- direct selling (i.e. selling products)
- content selling (i.e. selling information)
- advertising (i.e. giving out information such as news or directories for free, to drive traffic and sell it to advertisers)
- transaction & links (i.e. charging a fee for a transaction, such as selling an airline ticket on-line, or charging to link with a service provider, as in a yellow pages service).

3.3.3.k.iii. Direct Savings

By using a public shared infrastructure such as the Internet and digitally transmitting and reusing information, electronic commerce systems can lower the cost of delivering information to customers.

The third component of the business value of electronic commerce is in its opportunity to save on costs. By sharing a digital infrastructure such as the Internet compared to owning a physical one, marketing, distribution and customer service costs can be drastically reduced. The case of, for instance, Sun Microsystems' online support service on the Web, is widely reported for having saved Sun over $4 million.

By using automated systems and a digital transmission architecture, personnel, phone, postage, and printing costs can therefore be reduced. This is especially important in service industries, where the cost of customer service usually exceeds the product costs

(e.g. for banks, credit card or telecommunications companies). Checking order status, getting a usage statement or a bill are examples of activities, which can be delivered much more cheaply using electronic commerce. In each case, the customer value is also higher, through a quicker reporting, or through the added information value (e.g. delivering not only a statement, but also historical statistics or graphics, adding advice to reduce some of these costs, etc.)

3.3.3.k.iv. Time to Market

Due to their instantaneous nature, electronic commerce systems allow a reduction of the cycle time associated with producing and delivering information and services.

In some markets or for some products, the ability to distribute or receive a product as soon as it's been created is of primary importance. This is obviously the case of information distribution. A company such as Newspage, for instance, distributes information on hundreds of topics using electronic mail or the Web, to make sure it reaches its targets (usually decision makers in corporations) as soon as it is available.

In the financial market, which very often leads the way in terms of complexity of the environment, some financial products (usually derivatives contracts) have return on investment in a matter of hours. Their life cycle is often not much longer. It's in this type of environment, which will increasingly become routine for other industries that the speed achieved by electronic commerce to quickly gather information on customer needs, assemble a product by adapting existing ones or assembling building blocks and distributing them will become critical. Linking network of companies, each doing part of that assembly work, is currently a growing research area.

3.3.3.k.v. Customer Service

Through intelligence built into systems and the extended availability of intelligent support systems, electronic commerce systems can enhance customer service.

We already mentioned the case of Silicon Graphics and Sun Microsystems using the Web to provide customer support. The ability to provide on-line answers to problems, through resolution guides, archives of commonly encountered problems, electronic mail interaction (and in the future audio and video support), and all that 24 hours a day, 365

days a year, builds customer confidence and retention. Monitoring how customers use this support information also provides insights on improvement areas in current products and the list of issues encountered with products can be a significant source of product feedback for the design of new products. As consumers start using these systems in growing numbers, industries other than software will take note of these opportunities and deliver online customer service. Today, the Wells Fargo and the Security First Network Bank are two examples of banks offering on-line statements and answering electronic mail queries on bank accounts.

Two likely developments in this area are

- products which diagnose themselves, and use an on-line connection to call a support specialist which can arrive on-site, either physically or electronically, with the full knowledge of the problem that needs fixing
- knowledge-based systems which assist customers in finding solutions for their problems.

Both have already been seen in specialized fields (such as high-end copiers from Xerox, mainframe computers from IBM or minicomputers assembly from Digital), but are likely to become accessible to a broader range of customers and for a wider range of products.

3.3.3.k.vi. Brand or Corporate Image

Electronic commerce systems will become one of the components of a brand or corporate image, especially while targeting technology-friendly customer segments.

This might be one of the most intangible aspects to measure, but building a brand or corporate image is of prime interest in some industries, those with commodity products or high competition. For instance, in the soft-drinks industry, Coca-Cola and Pepsi spend huge amounts of money to try to differentiate basically similar products (or to take a less controversial example, AT&T, MCI and Sprint in the telecommunications business). Others, such as Levi Strauss in the fashion industry compete with others in being seen as young, fashionable and "hip".

All of these brands use their Web presence as a way to affirm their corporate identity and their brand image, in addition to providing product information, etc.

3.3.3.k.vii. Technology Learning and Organizational Laboratory

Rapid progress in the area of electronic commerce will force companies to adapt quickly and offer them an opportunity to experiment with new products, services and processes.

If what we mention in this section is true, it will have a large and durable impact on the strategies of most organizations. Therefore, it is critical that these organizations quickly become familiar with the technology. The learning curve of mastering such technologies, and understanding their power to reshape customer relationships, is steep and can't be achieved overnight. It is very often an iterative process, requiring organizations to try new offerings, and tweak them according to customer feedback.

In a similar fashion, new technologies require new organizational approaches. For instance, the structure of the group dealing with electronic commerce might have to be different from the one typically used in the organization, in order to be more flexible and responsive to the market, or new processes have to be put in place, for instance to deal with the authorization of publishing corporate information on the Internet. This type of corporate change needs to be planned and managed, and before getting it right, organizations might have to struggle with different experiments.

The value of both types of learning resides in the new capabilities the organization acquires, and the potential of using these capabilities in the future, as the market develops and customer expectations become clearer. The product and process innovation which appears in one corporate division is also positive, as it can be reused across divisions if success is achieved.

3.3.3.k.viii. Customer Relationships

Electronic commerce systems will allow for more personalized relationships between suppliers and their customers, due to their ability to collect information on customers needs and behavioral patterns.

According in today's world of overcapacity, in which demand, not supply, is scarce" there needs to be a shift from supply-side to demand-side thinking, and organizations need to "sense and respond" to customers' desires rather than simply make and sell products or services. The focus is therefore on establishing relationships with customers, based on

learning their needs and desires, proposing the right products and keeping these relations active throughout the years.

The role of technology in learning about customers is its ability to record every event in the relationship, such as customers asking for information about a product, buying one, requesting customer service, etc. Throughout all these interactions, either over the phone, in person or on-line, the needs of the customer are identified and will feed future marketing efforts. For example, if we use the example of the on-line travel agency, its ability to store and remember customer habits (e.g. always flies out of this specific airport, likes window seats and requests vegetarian meals) and particular data (e.g. frequent flyer numbers, preference for a particular rental car company, etc.) will establish a relation where the customer feels particularly comfortable in dealing with this particular travel agency.

All that data acquired about customers also allows provides a switching barrier, as customers would have to "teach" a competitor all that information. Moreover, a historical analysis of the data will reveal who are the most profitable customers (usually 20% of a company's customers generate 80% of the benefits) and products, therefore allowing to reduce the scope of products, to focus on the most profitable ones, and extend a product line by adding products likely to cater to the needs of these most profitable customers. Then, by understanding the segment of customers, which are most interesting, specific marketing efforts can be targeted to similar individuals, currently non-customers.

Becoming a trusted partner of a customer is key in maintaining these relationships. It can be achieved by providing him or her with valuable information. That pro-activity is likely to generate additional sales volume. Pro-activity is the ability to use the direct channel with the customer to inform him of specific offers, which would match his/her needs and buying patterns. For instance, early in the summer, you would propose special offers to a customer who's used to buy swimming suits through an on-line catalog. This could be done by an electronic mail sent to the customer's address, with a link to a specific page of the electronic catalog, and maybe a discount coupon to thank him for his loyalty.

Another example of such a strategy is currently used by Amazon, an electronic bookstore on the Web. Amazon allows its customers to program agents, which will send them

relevant information. Let's suppose you're looking for a book on technology and strategy. Amazon will provide you with a list of the existing books, but also offer you to keep your request "in mind", and send you information on titles published as they arrive. This information is sent through electronic mail and links with the online bookstore.

What electronic commerce brings as a lever to such strategies is the automation of the customer profile, his needs, buying patterns, etc. All that data can then be analyzed through computer applications and the right answer chosen. Therefore, personalized service strategies, which were before only achievable with a small number of customers suddenly become possible on a wide scale. For instance, in the past, the corner video-rental store owner might well have known your viewing preferences, and therefore advise you on new movies, but only through automated systems does this strategy stay feasible on a large scale. In this video example, a national chain could use that system to differentiate itself and increase customer retention by maintaining a global database of customer preferences. If you moved to a different city for instance, you would still be able to insert your membership card in a multimedia kiosk and get advice on which new rental choices better suit your taste.

On a more commercial level, CompuBooks, another bookstore on the Compuserve online service, sends customers an electronic mail message when they haven't visited their store for a while. The incentive to return is a few dollars of usage credit if they buy a book.

3.3.3.k.ix. New Product Capabilities

The information-based nature of the electronic commerce processes allows for new products to be created or existing products to be customized in innovative ways.

A large source of the business value electronic commerce can provide comes from changing the products themselves, in addition to the way they are advertised, ordered or delivered. This is mainly due to the potential of collecting information which will be used to customize products.

Mass customization has been used for some time now; it endeavors to create specific products for each customer, based on his or her exact needs. For instance, thanks to an information network and advanced production techniques, Motorola is able to gather

customer needs for a pager, transmit them to the manufacturing plant, manufacture a specific model (varying the form factor, color, features, etc.) and send it by overnight mail, all that in a few hours. Levi's, the jeans manufacturer, has brought similar techniques to the apparel industry, with the ability to custom produce a pair of jeans, based on specific customer requirements, thanks to an electronic network linking the retail shop (where the customer chooses the type of jeans, and her measurements are taken), the producers of the various parts of the jeans, the assembler and the shipping company. In both of these cases, the key is the ability to store customer preferences, use a flexible manufacturing technique to adapt a product to their particular needs and operate a network of suppliers which will join together to manufacture and deliver a product.

In the future, electronic commerce links between customers and suppliers will suppress the need for an infrastructure to gather customer data (a shop in our case) and will allow customers to do it from home, their office or on the road. This direct link also allows the supplier to gather very detailed data on customer profiles, their needs, patterns of buying, etc. Database marketing techniques can then be used to analyze this data, in order to improve new product development and target specific offers to certain customers. Gateway 2000 is a good example of a supplier custom-manufacturing personal computers, and offering product information which can be adapted to personal needs through their Web site.

Another opportunity in mass customization is to have the customer design part of the product himself. For instance, we could imagine a watch manufacturer with advanced production techniques, such as Swatch, providing its customers with computer-based tools allowing them to design part of the watch (e.g. the drawing on the background of the watch) and send these designs through a computer network to the watch manufacturing robot, before shipping the personalized watch to the customer. The ability to sell unique-design watches to customers at a retail-like price would be a great differentiating factor.

This creates a paradigm shift in the design of products, which is not perceived by every actor today. For instance, the Credit Card Network is a Web site, which basically lists different types of credit cards offered by US banks, both on-line and off-line. All of these

cards offer different features, such as interest rate, membership fees, credit limits, insurance, assistance programs, frequent flyer bonuses, etc. The customer is asked to look at the different offerings, and then choose the package which best conforms to his or her interests. It seems that the business model of this service could be changed, to take opportunity of customizing products. We would envision a service where the customer would be asked to check the features, which matter most to him/her (e.g. a frequent traveler paying his invoices in full every month might choose only frequent flyer bonuses and rental car insurance). A custom credit card package could then be designed especially for this customer, who would receive exactly the features he asks for, and no more, therefore avoiding paying fees for services he doesn't use. The interest rate or annual fee would be adjusted for each customer, based on the services that need to be provided and the expected revenue for the credit card company. This is similar to the Swatch example above, in the sense that the customer designs the product he wants to buy.

3.3.3k.x. New Business Models

Changing industry structures and electronic commerce systems allow for new business models, based on the wide availability of information and its direct distribution to end-customers.

Going further than new ways of selling existing products or services and the opportunity for new ones, we also see new business models emerging. Key among these new business models are new forms of intermediaries, or information brokers. Although it is true that electronic commerce will disinter mediate some industries, by directly connecting buyers and sellers, we envision new opportunities for actors repackaging information. The early examples are currently the directory providers or the search engines, such as Yahoo & Lycos. Also, in the car industry, Dealernet offers comparisons between any type of car, with pictures, product specifications and third-party reviews.

3.3.3.l. Prices[43]

Electronic commerce is widely expected to improve efficiency due to reduced transaction and search costs, increased competition and more streamlined business processes. Greater efficiency may manifest itself in a number of ways, including lower prices, finer albeit more frequent price modifications and a narrower dispersion of prices for identical

products. Lower search costs may possibly also lead to Internet consumers being more sensitive to price changes. So far, however, the available empirical evidence is mixed. Some of the first studies found that prices of goods sold through the Internet were on average higher than their equivalent purchased through traditional retailers. A more recent study, however, found prices for books and CDs on average to be about 10 per cent lower on the Internet compared with traditional retailers in the United States.24 These studies also find that price dispersion is no lower online and that prices tend to change more frequently reflecting lower menu costs the costs a retailer incurs when changing a posted price in Internet markets. Evidence on demand sensitivity to price is also mixed, with some work suggesting a low and others a high price elasticity of demand. Taken together, these findings provide limited support to the prediction that at least B2C e-commerce raises competitive pressures and improves economic efficiency. Part of the reason is that certain reductions in cost are offset by higher overheads elsewhere. For example, distribution switches from high-density channels (warehouses to shopping centers) to lower density routes (factories to residential areas). Some of these additional costs, however, may also reflect added benefits to consumers, such as less time spent in shopping centers and thus higher prices need not be associated with lower efficiency. Another explanation is that e-commerce retailers may have a better view of their clients' preferences, that makes more direct marketing and mass customisation of products possible and could also lead to more finely differentiated and sophisticated price discrimination for products. If prices are based on understanding individual consumer valuation, there is no reason to expect prices to gravitate to a single value across retailers or customers. Moreover, a diversity of prices for broadly similar goods does not necessarily imply inefficiency. In this regard, the critical issue is whether price discrimination increases or decreases the size of the market. The greatest possibilities for e-commerce to reduce prices exist for goods and services which can be digitized, thereby allowing substantial economies in production and delivery costs, and for B2B e-commerce and B2B exchanges where opportunities exist for efficiency gains via lower procurement and inventory costs and better supply chain management. Many companies claim that putting their supply chains online has led, or will lead, to major cost savings. According to a Goldman Sachs (2000) study these gains range between 2 and 40 per cent of total input costs depending on the industry and could lead to an economy-wide price

reduction of almost 4 per cent, although such estimates depend on numerous assumptions and are inherently uncertain Moreover, estimates of the impact of e-commerce on prices cannot adequately take into account other characteristics of e-commerce which businesses appreciate, such as increased information and choice.

3.3.3.m. Competition and Competition Policy[44]

Persistence of price dispersion across Internet markets and the absence of noticeable price reductions has led to concerns that the cost structure of some Internet markets could ultimately result in less competitive outcomes. The scope for non-competitive behaviour is perhaps strongest among "digital" and knowledge intensive products. For such products, once the first copy of, for example, a software application is produced; the cost of a second copy is close to zero. Such a cost structure implies increasing economies of scale. The challenge to firms is to find a way to price their output so as to sell to a broad enough audience and thereby recoup the high initial per unit cost of production. One way to do this is to differentiate the underlying good or service so as to appeal to different market segments. Information services, for instance, are sometimes differentiated by offering different levels of quality such as degree of convenience, more timely and frequent updates, access to technical support, broader coverage and more sophisticated user interfaces.28 The risk, however, is that the scope to differentiate output is limited and leads to a situation whereby the firm with the largest production is able to undercut and ultimately force out of business its competitors. Closely related to increasing economies of scale, the Internet also appears to be a prime example for the existence of "network" externalities; each additional user of the network increases its value to other users. In these circumstances, firms in network industries have a strong incentive to expand their customer base and a strategic interest to do so as early as possible. Start-up companies may find it difficult to enter due to the large marketing costs needed to develop visibility and a brand name. It is still too early to know how big these barriers are and whether the Internet will favour, or not, contestable e-commerce markets. Low contestability could result in highly concentrated "winner-takes-all" scenarios, which could hinder innovation and competition and may thus require the attention of policy.

On the other hand, the Internet offers the ability to reduce barriers to entry and make markets more contestable in other parts of the economy. The open and interoperable standards of the Internet, could limit opportunities to dominate markets, by expanding the

size of the market. By exposing firms to global competition, the Internet might also expedite progress towards implementing product market reforms. As well, consumers could benefit from the development of more powerful "intelligent agents" which navigate the Internet and automate, for instance, price search and comparison across e-commerce sites. By reducing search costs and increasing the flow of information, the Internet might thus effectively shift power from producers to consumers and make it harder for firms to maintain higher prices.

3.3.3.n. Tax, Trade Policy and Regulatory Issues[45]

The rapid growth and development of e-commerce begs a number of questions about taxation and tax policy. Concerns have been expressed that e-commerce could result in the erosion of tax bases. Consumption taxes are levied on the principle of taxation at the place of consumption and according to rates set in individual countries, or in individual states in the case of federal nations. E-commerce, however, has the potential to undermine the application of domestic and national tax rules. Under Value Added Tax (VAT) systems, for example, particularly in the case of business to consumer transactions, the supplier who is normally responsible for collecting consumption taxes may have limited means to prove the location of their customers. The supplier may also be beyond the fiscal jurisdiction of the fiscal authorities where consumption takes place. In practice, this issue appears more acute for products, which can be digitised and delivered online. Regarding potential tax loss related to physical products traded across borders, but ordered over the Internet, many countries have a de minimis relief for low value transactions, whereby when below the value threshold these products legitimately fall outside the tax net. Emerging issues here are the need to minimise distortion to competition and to find the right balance between the cost of collection and the amount of foregone taxes. Given the present size of e-commerce, serious erosion of the tax base is not in prospect. In the future, however, it may become more of an issue for tax authorities. The technology which underlies e-commerce also opens up a number of opportunities that tax authorities should seize to improve the efficiency of tax administration and to enhance taxpayer service (examples of C2G and B2G Internet applications). The Internet technology has the potential to greatly improve communication between tax authorities and taxpayers and to enhance access to information for tax authorities, so helping them to encourage voluntary compliance with

tax obligations. In particular, the Internet facilitates the electronic assessment, filing and collection of taxes. Overall, therefore, e-commerce should not only be seen as a threat to tax yields, but also a means to reduce the cost of complying with tax rules and enhance tax collection. E-commerce, especially for digital products, blurs the notion of geographical boundaries such as place of supply or residence. Since trade policy like tax policy is based on such distinctions, governments may find it difficult to determine jurisdiction and tariff revenue rights. Moreover, the laws and regulations a consumer relies on for protection at home may not apply in the merchant's country. Indeed, in some quarters there are concerns that the scope for the Internet to transcend national boundaries could emasculate the ability of regulatory bodies to fulfill their objectives. There is thus a need to update regulatory frameworks and strengthen co-operation between regulatory bodies to achieve the goals of economic regulations, but without jeopardizing the efficiencies likely to be associated with the growth of e-commerce. The World Trade Organisation (WTO) has begun to address some of these issues. The approach adopted has been to consider e-commerce as another medium for exchange and thus subject to the same rules and regulations as conventional transactions; the principle of equivalent treatment. The WTO members in May 1998 agreed on a temporary moratorium against the imposition of customs duties on electronic transactions per se. Even without new duties, however, a potential barrier to the proliferation of international e-commerce is the uncertain application of existing customs duties. B2C e-commerce shoppers are rarely informed about duties they are liable to pay and vendors find it difficult to provide information on the myriad of customs regulations across countries. Often, therefore, the consumer is uncertain of the final cost and could encounter delivery delays as goods are held until customs clearance. The World Customs Organisation (WCO) has worked on these problems and has advocated procedures for simplified customs clearance, information technology requirements and guidelines for greater transparency.

3.3.3.o. Employment and Labour Market Policy[46]

The development of e-commerce is likely to have both direct and indirect impacts on labour markets as well as the composition of employment. The widely expected rapid growth in e-commerce should boost the demand for jobs in e-businesses, but since the size of e-commerce in the short to medium term as a share of all activity is still likely to

be small, these new jobs should not be counted on to relieve existing labour market problems in some countries. The latter still needs to be addressed by appropriate policies *vis-à-vis* labour markets. Although the direct employment consequences of e-commerce may not be large, it is likely to drive widespread changes in the labour market, shifting the composition of workers required to produce and deliver a product or service. For example, a retail sale via the Internet probably does not require the same intensity of sales staff, but it requires people with IT skills to develop and program software, operate and maintain computer servers and networks and people skilled in graphics design to keep the *web site attractive and others to dispatch orders. In addition, firms will implement* modifications to their production processes in order to exploit the potential of B2B and B2C commerce over the Internet. Certain jobs, especially those characterised by the transfer of information from one party to another such as travel agents, insurance and stockbrokers are likely to be redefined and become less common. Faster rates of innovation and diffusion may also be associated with more turnovers of jobs. In such an environment it is important that workers have the opportunity to learn new skills and that policies do not prevent the swift

reallocation of labour to the changing needs of the economy. Otherwise, the new opportunities offered by the Internet may be missed or unnecessarily delayed.

3.3.3.p. Economy[47]

E-Commerce over the Internet, as a new way of conducting business, has radically altered the global economy. Though only for three years, it affects large sectors of economies such as communications, finance and retail trade, education, health and government, we illustrate these changes by from the following viewpoints:

3.3.3.p. a Economic Drivers

3.3.3.p.b Economic Efficiency

3.3.3.p.c Business Models, Sectoral Organisation and Market Structure

3.3.3.p.a. Economic Drivers of E-Commerce

E-Commerce emerges to be the fastest growing business activity in many economies basically because it possesses the following economic drivers:

3.3.3.p.a.i E-Commerce Transforms the Market Place – It replaces the traditional intermediary functions and brings business community far closer to consumers than before. In addition, new products, either tangible or intangible, emerge in this new marketspace. It also brings great changes in work places in terms of knowledge diffusion and human interactivity. The current work place has become more opened, flexible and adaptable than before.

3.3.3.p.a.ii E-Commerce Catalyses the Economy Growth – It catalyses the speed of reforms of regulations, the establishment of electronic links in business, the globalisation of economic activities and the demand of high-skilled labor.

3.3.3.p.a.iii E-Commerce Shortens the Distance within the Economy – Not only for large businesses to large businesses, the linkages also extend down to small businesses and households and really reach the mass of the public. Access infrastructure will also shift from relatively expensive and difficult-to-use Personal Computers, to relatively cheaper and easy-to- use Televisions (Web TV) and Telephones (Palm).

3.3.3.p.a.iv Openness Serves as the Seeds of Fast Expansion of E-Commerce – The non-proprietary standardized infrastructure and platform for business has been the power to simulate the corporate community. It has induced many E-Commerce ventures granting business partners and consumers unparalleled access to the inner computer system of each other. Consumer has greater bargaining power in transaction because openness facilitates more rigorous flows of product information. This leads to a more efficient marketplace and accelerates the growth of E-Commerce.

3.3.3.p.a.v E-Commerce Changes the Relative Importance of Time - Many functions in the economy are a function of time. In the past, mass production is the fastest way to product in the lowest cost. Community tends to be geographically determined because time is a determinant of proximity. E-Commerce reduces the importance of time by speeding up production cycles, allowing firms to co-ordinate and enabling customers to conduct transactions around clock.

3.3.3p.b Economic Efficiency Brought by E-Commerce

E-Commerce, as mentioned in the former section, has greatly reduced the distance between business & business, and business & consumers. It leads to the emergence of a frictionless economy where transaction costs approach zero, barriers to entry and competition disappear, and markets clear instantly. This trend is mainly given rise by the expected elimination of intermediaries and transaction costs. The following are the possible sources of efficiency:

3.3.3.p.b.i Falling Cost of Information and Communication Technologies – E-Commerce runs on an infrastructure composed of computers, software and communication systems. Because the prices of the mentioned items have declined drastically, the infrastructure costs also drop by large and becomes widely available to the business community. Components like disk drives for data storage, printers and other peripherals have significantly declined in price. The overall price of mainframe and PCs also drops by a factor of three and five respectively from 1984 to 1994. New communication technologies like optical fiber, satellite digital subscribers lines all decline largely in price at least a factor of three from 1995 to 1996. This allows firms to switch to new technologies and largely cut their cost in data storage, analysis and transmission. Hence this can be interpreted as the source of cost saving and efficiency of firms. It also in turn makes the application of E-Commerce strategy more affordable.

3.3.3.p.b.ii Impact on Production Cost – A key element of the technological convergence (software, hardware and network system) is a shifting of the former trade-off of information (amount, customization, interactive) and its reach (exposure, coverage). The richer information reaches the general corporate community and individuals as a result. While the combined effects of ICT on costs, productivity and prices for electronic commerce are likely to be difficult to determine, it may be the sum of these technologies generates much greater utility than their individual parts, so that productivity impact will be clearer. E-Commerce is the key commercial application of this union.

3.3.3.p.b.iii Changing Firms' Cost Structure – The impact of E-Commerce on firms internal production and transaction costs falls into the following categories:

3.3.3.p.b.iii.1 Cost of Executing the Sale. Usually, E-Commerce involves a physical establishment of setting up and maintaining an E-Commerce web site, ranging from $349 (Jackson, 1998) for a E-Commerce in box, to about $ 8,000 for start up and $ 10,000 for yearly maintenance service, to hundred of millions dollars for a state-of-the-art site. Considering the global accessibility and 24 hours operations nature of the site, it is far less expensive than maintaining a physical one with this similar market power. Besides, by maintaining one store (one site) instead of thousands physical ones, the duplicate inventory costs are eliminated.

3.3.3.p.b.iii.2 Order Placement / Execution. E-Commerce helps business to transfer information to the customer. The information provided to customers in the web can even benefit the tradition transaction mode (off line). The better-informed customers are, the easier and less costly to serve and more inclined to make transactions when they come to stores. For example, Micron Computer sales persons spend only one tenth of their time to serve the customers who already visit it web site. E-Commerce also drastically reduces cost of attracting customers. Advertising via web is much cheaper than other media and more targeted. For example, MSN car point usually charges car dealers $ 200 /deal. But car dealers themselves usually spend $ 450 on traditional promotion media per car sold. Finally, electronic interface allows E-Commerce merchants to check that an order is internally consistent and that the order, receipt, and invoice match. GE reports one quarter of their orders have to be reworked because of errors. Cisco, on the other hand, can decrease its error rate in this aspect to 2%. This can mean a significant improvement of efficiency.

I. **Customer Support / After Sales Services.** Through E-Commerce, firms are able to move much of the support in visiting clients, staffing call centers and publishing documentation, which are necessary cost components in traditional customer services, to support on-line, so that the customer can access databases and smart manuals directly. For example, Fedex Internet site provides customer services like ordering pickup, generating bar code, and permitting customer-

tracking delivery. It costs about $ 7 to serve one customer via Internet versus $ 15-20 via phone. It also improves the efficiency of Fedex in customer services by reducing errors in phone customer services. The staffing efficiency and cost saving is also of utmost importance. For example, Amazon.com needs 614 customer support staff versus 27,200 in Barnes & Nobles in 1998. The former is the largest US E-bookseller and latter is the largest US physical book store

II. **Purchase Orders / Procurement.** E-Commerce also brings tremendous value to the procurement process. Usually, via traditional channels, a typical purchase order cost $80-125. But EDI type systems can drastically cut 10-50% of the cost chiefly by eliminating errors and departmental document transfer. It also enhances and shortens the purchase cycle of firms. For example, MCI reports its PC purchase cycle is shortened from 4-6 weeks to 24 hours by EDI type of procurement system.

III. **Inventories.** A key factor of E-Commerce to reduce cost of inventories is improving the ability to forecast demand more accurately. The electronic commerce merchants, who offer a built-to-order computer, know exactly what consumers prefer and can adjust the product line accordingly. In addition, the links that E-Commerce provides along the supply-chain make it possible to pass this information on to partners, thereby lowering their costs in inventories. This practice, known as Collaborative Planning Forecasting Replenishment (CPFR), is estimated to lead to a reduction in overall inventories of $250 –350 billion, or about 20-25% in current US inventory level in 1998.

IV. **Distribution.** Distribution costs are largely lowered for digital products such as financial services, software, and travel. For example, it costs $ 8 to distribute an air ticket via traditional channels versus $ 1 via Internet. Bill payment costs $2.22-3.32 to distribute traditionally versus $ 0.13 via Internet. Even for tangible goods, E-Commerce methods can reduce administrative cost in distribution, trade and custom clearance by over 25% (WTO, 1998).

3.3.3p.c Changes in Business Models, Sectoral Organisation and Market Structure

E-Commerce gives rise the new generation of business entities, known as Cyber-traders. They are usually consumer retail firms and have achieved remarkable success and high growth rates. Their contribution to total retail trade is still insignificant. However, they give rise to new business models and organisation & market structures to the economy. Ideas like "Inter-networked" enterprise, Web-based alliances have harnessed the power of market forces.

3.3.3.p.c.i Forcing Competitors to Comply to New Models – Internet applications and E-Commerce give more space for cyber traders to innovate and invent new business models which have the different revenue sources and competitive advantages focus from the traditional models. For example, Dell sells computers directly to customers and expects to handle half of its business over the Internet by 2002. It transfers the inventory and logistic costs to customers and hence achieves a phenomenal sales growth rate and net trade cycle (- 4 days of Dell vs 72 days of Compaq). Its competitive advantage over the traditional players is hence on its logistics and distribution. The competitors hence cannot compete with Dell in cost and have to comply to this new model. For example, HP starts its own Web site for direct selling. A counter example is Compaq, which still has not initiated direct sales via Internet. Its 4^{th} quarter earning in 1998 hence drops to 15 cents / share (50%) and enters the negative territory in the 1^{st} quarter in 1999.

3.3.3.p.c.ii From Proprietary to Open Networks – The Internet extends the benefits of EDI to all of a firms' suppliers, opens up certain proprietary relationships, extends relations between sectors, makes the electronic market accessible to smaller businesses and allows them to address international markets. This in turn lowers entry barriers and creates greater incentives for SMEs to enter the market, thereby generating competitive effects. The result is an expanding market, more transactions and more providers. Therefore, we witness the change in market structure.

3.3.3.q. Ten Ways EC Affect the Environment[48]

E-commerce promises to reshape our lives, transforming everything from the way we shop for daily necessities and pay our bills to how we save and invest our money, buy recordings, and plan our vacations. Product prices are more easily compared, and buyers

gain a great deal of power. In many industries, consumers will tell manufacturers what to produce and how much they are willing to pay not through the market, but directly via their computers. Like other dramatic shifts in commerce over the past few decades the rise of shopping malls, the growth of fast food, the globalization of production e-commerce will have significant environmental consequences. Many of these could be positive. For example, e-commerce has the potential to:

- foster more efficient methods of product delivery;
- reduce the need for certain materials, including wasteful products such as printed catalogues;
- reduce the number of shopping centers and their inefficient use of land;
- empower citizens to identify -- and demand -- products that are less toxic, more energy efficient, and longer lasting.
- prevent waste by vastly increasing the efficiency of the market for secondary (reused and recycled) materials.

In the networked economy that is almost upon us, the winners will be those who can take advantage of the benefits of e-commerce while avoiding the liabilities. By assessing the environmental variables at this early phase, we can be better informed about the trends to watch and the policies and practices that need to be put in place to ensure that e-commerce leads not to waste and inefficiency, but rather to an ecologically sustainable society.

3.3.3.q. a. "Mass Customization" for Eco-Efficiency

Thanks to the Internet and innovative production technologies, companies are beginning to manufacture products specifically designed for individual consumers. Mass customization could have profound environmental benefits. First, allowing manufacturers to more accurately match production to consumer demand potentially reduces the energy and construction waste associated with the warehousing of products. Second, it could cut down on excess or unwanted materials, increasing the likelihood that products will sell and reducing waste. Third, customized formulations of various products, such as pesticides and detergents, could encourage reductions in the associated environmental and health risks.

3.3.3.q.a.i. Just in Time

The product supply chain, made up of companies involved in the distribution of goods from manufacturing plants to retail outlets, comprises an enormous number of links. Companies able to accurately predict consumer demand at the retail level can reduce excess inventories by replenishing the items they sell with the right quantity at the right time to the right locations. In theory, this could decrease the space needed to store products before they are sold, thereby minimizing the environmental impacts of warehousing: the consumption of open spaces by warehouses; the materials used to build them; and the energy needed for heating, cooling, and lighting.

3.3.3.q.a ii Just Enough

Customization enables producers to manufacture only the quantity they can sell and consumers to order only the quantity they need, thus reducing product waste. One of the fastest-growing applications is in the college textbook business.

3.3.3.q.a iii Just for You

Through mass customization, manufacturers can formulate products specifically for individual customers: detergents that fit the cleaning needs of particular workplaces; pesticides that fit the insect population of specific localities, lawn care products that fit the nutritional needs of unique landscapes; and cosmetics and personal hygiene products formulated to avoid a particular allergen or exposure to a particular chemical or chemicals.

3.3.3.q.b. Marketing by Pixels Instead of Packages

Manufacturers invest large amounts of money in the design of packaging intended to attract the attention and whet the appetite of consumers in addition to protecting the product. The environmental costs of packaging are enormous. In the United States, packaging accounts for one-third of the municipal solid waste generated by consumers. Even if all this material were recycled, the energy and labor involved in collection, sorting, and processing would be a huge municipal expense. And some packages contain inks and dyes that make recycling expensive or difficult.

When products are sold via the Internet, the marketing functions of packaging -- catching the eye of shoppers, conveying product information quickly, make an impression through size become less significant. Instead, the computer image is what communicates a product's qualities and attracts the consumer's attention. Moreover, since the backbone of on-line shopping is shipping efficiency, e-commerce creates incentives to reduce the size and weight of product packaging. In addition to transmitting images of a product, the Web can provide much more information including audio and video clips than can be effectively incorporated into a catalogue, let alone a print ad. On the other hand, it may turn out that the image is not the most important part of a retailer's Web site or Internet ad. Instead, clear product descriptors easily picked up by search engines may be more valuable than graphic representations of color, shape, and texture. Consequently, the superior quality of on-line information may eventually render the glossiest of catalogues obsolete and maybe the biggest, brightest, and environmentally costly of product packages as well.

3.3.3.q. c. Dematerialization of Products

Many of the materials that fill our landfills -- from books and periodicals to stereos, video recorders, cameras, telephones, and answering machines are products designed to manipulate, store, and transmit information. Similarly, huge amounts of resources are devoted to (and consumed in) the vehicles that allow us to acquire information in person -- taking the car to different stores to comparison shop, for example. And many of our institutions, from the post office to the local bank, consume energy and materials by occupying structures that exist mainly to process information. As a technology for manipulating, storing, and transmitting information, the Internet can perform many of the same functions as these material objects, and in some cases much more quickly and conveniently. This substitution of bits and bytes for physical goods has been called "dematerialization." Dematerialization through e-commerce will increase the efficiency with which we assimilate and communicate information, entertain ourselves, and conduct financial transactions. It also has the potential to dramatically reduce the raw materials used in the production of goods, the energy consumed in manufacturing, and the solid waste generated by businesses and consumers. Although the technologies are still in their

infancy, a glimpse at several developments suggests that the long-term environmental impact may be tremendous.

3.3.3.q.c.i From Books to Bytes

Approximately 470,000 tons of bulky telephone books are discarded each year, yet only 10 percent are recycled. Not surprisingly, the Internet is beginning to displace a wide range of printed materials: magazines and newspapers; books and journals; dictionaries and encyclopedias.

3.3.3.q.c.ii. From CDs to MP3s

The music industry offers another example of how e-commerce can promote dematerialization. It is now possible for anyone with a fast Internet connection to download, at no cost and within minutes.

3.3.3.q.c.iii. From Snapshots to JPEGs

The family snapshot poses surprising environmental risks. The manufacture of film, processing chemicals, and photographic paper is a significant source of emissions of toxic chemicals such as methylene chloride, methanol, acetone, toluene, chromium, selenium, and methyl ethyl ketone (EPA, 1994). Photo processors generate ferrocyanide sludge and wastewater containing silver, as well as film chips and chemical recovery cartridges that also contain silver. Although the toxic constituents of photographic processing solutions have been reduced by 30 to 50 percent and silver recovery has increased in the last decade.

3.3.3.q.c.iv. From Checks to Clicks

Bills account for 60 percent of the first-class mail delivered by the U.S. Postal Service. The average household receives 10 to 12 recurring bills each month, for an annual total number of more than 15 billion bills (Walker, 1999). Financial transactions performed via the Web require far fewer material resources and none of the energy involved in moving information stored on paper to and from the home or office. It is estimated that electronic billing saves approximately 50 to 75 cents per bill in envelopes and postage, and another $1 in handling costs.

3.3.3.q.d. The De-Malling of America

The most immediate of these potential environmental effects will be in retail real estate. In the future, shopping and selling may no longer require a shop. Instead, Internet "real estate" -- a colorful banner on a popular browser program -- may become critical. As a result, demand for existing retail facilities could decline, reorganizing retail real estate industry "with a force equal to the explosive effect of the shopping center in this century

3.3.3.q. e. Let Your Modem do the Driving

Compared with 1969, the average American now drives longer distances more often to go shopping, and 20 percent fewer passengers go along for the ride. The growth of suburbia, the emergence of "edge cities," and the lack of effective transit tying communities together have all contributed to making automobile dependency a fact of life. If e-commerce becomes a significant mode of shopping, this ecologically unsound trend may be stanched or reversed. In theory, the Internet could replace inefficient automobile trips (on average, only 1.74 persons ride per vehicle) with package deliveries by shipping companies (such as FedEx and UPS) that have the technical capability and economic incentive to maximize deliveries per mile. This outcome will depend, of course, on whether Internet shopping replaces or merely supplements trips to the store. In the short run, with e-commerce still a novelty for most people, a certain amount of redundancy is likely, and the total vehicle miles traveled could actually rise. Meanwhile, a number of obstacles unrelated to customer habits remain in the way of increased efficiency.

3.3.3.q.f. Closing the Loop On-Line

Packaging is the single largest category of municipal solid waste, accounting for one-third of its weight and half of its volume. Many countries around the world require businesses to take back and recycle their packaging, both to reduce the amount of material sent to landfills and incinerators and to encourage manufacturers to create less wasteful designs. Regulations requiring take-back are also being extended to products themselves, particularly those that are difficult or dangerous to dispose of, such as electronic equipment, fluorescent bulbs, and mercury-containing thermostats and switches.

Substantial obstacles to packaging and product take-back remain. In particular, the logistics of collecting and transporting material from the consumer to the manufacturer are complex and costly. The existing supply chain has been optimized for one-way delivery of goods through traditional retail outlets, not for a closed loop.

With the advent of e-commerce, however, third-party shippers have an incentive to devise cost-effective take-back systems, meanwhile expanding their market and increasing the efficiency of their vehicles. The trucks that transport products ordered over the Internet can make deliveries and pickups simultaneously in the same neighborhood, delivering goods and returning packaging or discarded products back to the original manufacturer or retailer. Moreover, to reduce the costs of home delivery and make Internet purchases competitive with store-bought products, companies may shift to reusable shipping containers to reduce the cost of corrugated boxes.

3.3.3.q.g. GreenBot.com

.In surveys, people regularly claim that they would pay extra for environmentally friendly products, yet few of those products become consumer hits (Nixon, 1998). In large part, this is because price is such a strong determinant of market demand many consumers won't shell out extra cash for compact fluorescent bulbs, even if the savings in energy consumption *and* operating costs are significant.

Shopping for green products is not so easy. Savvy green consumers can read Consumer Reports and other literature to find the most energy-efficient appliance or the safest microwave, but this is laborious and impractical for day-to-day shopping. Moreover, studies have found that consumers are skeptical of claims made on the labels of green products.

E-commerce gives ecological comparison-shopping an entirely new dimension, both automating it and making it virtually transparent to the consumer. Computer search engines, called "bots" (short for robots), can potentially scour Web sites by key words, concepts, amounts, or virtually any criterion that can be defined by words or numbers: the cheapest available Furby doll, an air conditioner strong enough to cool a Texas ranch, or an antique Hasselblad camera in mint condition. Soon, a clever entrepreneur will no doubt create a search engine to scan for green products.

3.3.3.q.h. Materials Reuse Through On-Line Auctions

Thrift stores and yard sales have always been a better alternative for items otherwise destined for the dump. E-commerce has the potential to create a global yard sale, matching people cleaning out their attics in one part of the world with bargain-hunters everywhere.

3.3.3.q.i. Adding Information to Products for Environmental Efficiency

Companies are realizing that using information to facilitate or enhance a product's intended function can be very profitable. They are learning to do so by embedding information within a product, providing information on how to use a product more efficiently, or offering services that can eliminate the need for a product. This process has the potential to make products far more effective, efficient, safe, and long lasting, with all the attendant environmental and health benefits. It has become much more feasible with the expansion of e-commerce.

3.3.3.q.j. Global E-Commerce

In the last half of the twentieth century, reduced trade barriers, enhanced communication, and increased technology transfer have led to globalization of the economy. Procter and Gamble's Pringles potato crisps are sold in kiosks throughout Siberia. GM cars assembled in the United States contain parts made around the world. As e-commerce spreads, consumers will be able to more easily locate and purchase products fabricated and sold abroad. This increase in global commerce could have enormous environmental impacts, both positive and negative.

On the plus side, on-line consumers from the four corners of the globe will be able to disseminate information more quickly and widely than ever before, from warnings on environmentally unsound products or packages to news flashes on innovative green products.

3.3.3.r. Indian Scenario[49]

The net breaks the artificial boundaries of geography thus making the global market an economic reality. The e-commerce will significantly influence the way a traditional business unit is organized. With the seamless gateways and networks (essentially portals) that connect them to the constituents now becoming technologically possible, companies

can focus on core operations. There will be portals for Investment services, accounting services, taxation services and payroll services. All these will enhance the productivity and efficiency of management. The world will make transition of virtual organizations, virtual staff and virtual storage.

The impact of e- commerce is already visible in manufacture supply – chain as well linked financial services. The role of middlemen will diminish gradually. The manufacturing sectors will undergo substantial change with concept like just in time becoming real possibilities, thereby eliminating the nee for stocking inventories and freeing cash. Bank will feel less of a need to maintain physical presence. Existing distribution channel like supermarket and shopping malls will be affected, the distribution of music and motion picture will witness a substantial change in the news millennium and the number of cinemas, video libraries and record shop will shrink. Customer will be able to order the music or motion picture of their choice on line without physically visiting a video or record-shop.

India is uniquely positioned and it has to start from the scratch. There is need to develop high speed, long distance backbone network that will interconnect the entire world. The existing business rule needs to undergo radical change and news business strategies have to be evolved. The Indian evidence Act. 1997 does not take cognizance of the electronic transaction. Reserve bank of India does not allow credit card information to be supplied over the Internet without a legally binding signature. The Govt of India has formulated certain guidelines to make e- commerce a reality.

At present, the Internet in India is growing at the rate of 10 percent per month. The info communication penetration in INDIA is 13 per 100 people as against the world average of 10. Out of 6,04,374 village only 267832 village have telephone service are very expensive. It many effect India's participation in e- commerce. However, the Govt. of India has realized the importance of information power. Recently, one of the recommendation of task force on information technology has recommended for conversion of all STD / CO booth into info- kiosks. Expert say that Net user in India would increase to 25 million in the next 5 year.

It is time for India to restructure its legal, business and communication infrastructure. If it fails to do so, it will cost India heavily. A recent relevant example is Ludhiana in Punjab, which suffered heavy loss in business. Ludhiana is known for its export of hosiery and

sports goods. Recently, exporter noticed an inexplicable drop in sales. Further enquiries reveled that business is being lost to Pakistani exports across the border. The reason for this was neither quality nor price, but the exporter in Pakistani have put their product on the web. Increased convenience and communication has led to the loss of business to India.

India has to evolve a legal framework for the recognition of its global intellectual property rights patents copyrights, in order to global organisation to offer their products to the masses. N. Vital, Chief Vigilance Commissioner of India, listed six C's that are required for e-business to grow in India. They are computer density, connectivity, content, cyber law, cost control and common sense.

3.3.4 Survey Reports

Following survey was conducted by two internationally renound consultancy organisations in India in order to see the results of adapting Electronic Commerce. Surveys conducted by leading consultancies in the world also provide valuable insight in the research.

A. A Survey of Electronic Commerce in India (KPMG)[50]
B. A Survey of Electronic Commerce in India (IMRB)[51]

A. ***A Survey of Electronic Commerce in India (KPMG)***

A survey of Electronic Commerce in India was conducted by KPMG in 1998. The survey outlines the developments in Electronic Commerce and highlights problems that are being encountered along with benefits realized. The survey sample consisted of 116 Indian Companies 69 of which had a minimum turnover of Rs. 1 billion, and 17 with an annual turnover of Rs 10. Billion. Respondents included CEOs, CFOs, CIOs and Heads of Marketing at the companies surveyed.

Survey Results

A.1 Electronic Commerce is very important to Business Strategy

It was found that nearly half the organisations surveyed gave importance to Electronic Commerce as a part of business strategy. Only 4% said that it was of no importance to their business strategy.

A.2 Improved Productivity, Improved Product Quality and Improved Customer Service are the Major Benefits Realised

The above benefits got more than 50% weightage in the ratings given by respondents while shortened supply chain and reduced costs got about 45% weightage. 57 % of organisations using Electronic Commerce reported significant benefit from it.

A.3 The Major Potential Benefits of Electronic Commerce are Improved Customer Service and Improved Productivity

Respondents believed the principal benefits of Electronic Commerce to be Improved customer service and Improved productivity. These two benefits were given much

higher weightage by respondents while the other benefits like Shortened Supply Chain and Reduced cost were given a similar lower weightage.

A.4 Companies are Held Back by Lack of Standard Payment Infrastructure and Trading Partner's Technology

Although companies were keen to use Electronic Commerce to improve customer service and productivity, they believed they were being held back by the Lack of proper legal support for electronic transactions and the trading partner's inability to setup and manage the required technical infrastructure.

A.5 Security is not an Insurmountable Problem

Respondents cited security as another major barrier to Electronic Commerce. However, security appears to be an overhyped concern as observed in KPMG's survey of the European market. It was found that companies that take a pragmatic view are more successful in exploiting Electronic Commerce, and companies that had made sales via the Internet were less likely to see security as a problem.

A.6 Integration

Senior level support and Budget allocation were given due weightage as actions taken for integration of Electronic Commerce technologies with existing processes. Committing manpower and integration with operational activities got lower weightage.

A.7 Preferred Electronic Commerce Technologies

Email, WWW Access and a WWW Website were the most widespread technologies currently implemented. EDI and Extranet were the most favoured for initial implementation within 3 years while IVR, Extranet, Smart cards and Debit/ Credit cards were slated for initial implementation in five years.

A.8 IT Department and Executive Committee are the Biggest Sponsors

While the Executive Committee took the initiative in Funding (65% of organisations) and Championing (33% of organisations) the IT Department Championed (53% organisations), Developed (64% organisations) and Maintained (68% organisations) Electronic Commerce initiatives.

A.9 Most Favoured Technological Features to Implement Security

Respondents rated Network access controls (95% weightage), Through-the-system tests and audits (90% weightage) and Centralized network management (88% weightage) as the preferred features to implement security.

A.10 Most Organisations were not aware of their Transaction Volumes

Less than half of the respondents were able to provide details of the volume of transactions done electronically, while nearly half of these said that they had zero electronic transactions. It was found that the total annual value of transactions done electronically by respondents was about Rs. 123 million.

A.11 Trading Partners Viewed Favourably

Most of the organisations surveyed were favourable to their trading partners in terms of considering their concerns, having explicit role based agreements, quality of communications, long associations and levels of trust. While most organisations work closely with their business partners, many of these do not trade with them electronically. Hence it is evident that there is a large, unutilized potential for Business-to-Business implementation of Electronic Commerce in India.

B. A Survey of Electronic Commerce in India (IMRB)

Another survey was conducted by Indian Market Research Bureau based on case study (in-depth discussions with the CEO and/or CIO of 9-10 pioneering Indian organizations in the core sector, automobiles, consumer products, banking & finance, trading and Internet retailing.) and Survey based (Business and Households)

In the Survey involving business, two key respondents were identified as relevant opinion makers in an organization: CEO and CIO.

A self-filling structured questionnaire was sent to 400 CEOs from key vertical segments in top 6 cities of India. Of this only 36 replied.

A comprehensive semi-structured questionnaire was conducted on 318 CIOs from key vertical segments in top 6 cities of India. The organizations identified represent the top 4000-5000 organizations in India.

The household survey was conducted amongst SEC A &B households in top 16 cities.

Survey Results

B.1 Electronic Commerce is Associated More with Accessing New Markets

Businesses associate Electronic Commerce more with accessing new markets, particularly international markets. It is closely associated with the Internet, new selling environment and a new method to acquire customers. More than 80% of the CIOs are of this opinion.

B.2 Electronic Commerce is Crucial Element in Strategy

40% of the CIOs say Electronic Commerce is a crucial or substantial part of their business strategy, while 58% of CEOs rated Electronic Commerce as a crucial part of their organization strategy.

B.3 Improved Customer Service is the reason to Adopt Electronic Commerce

Not shortened supply chain, but improved customer service, increased productivity/efficiency, access to international markets and cost reduction were the reasons stated by over half of the organizations to adopt Electronic Commerce.

B.4 Sales/Marketing is the Focus Area Amongst Business Functions

Over 50% of the CIOs and over 55% of CEOs say sales/marketing, operations, corporate and finance are the business functions likely to get impacted due to Electronic Commerce. Across various industry segments like general manufacturing, consumer products, media and IT companies, sales/marketing is the focused business function.

B.5 Electronic Commerce is Happening

About 15% of the organizations contacted in the CIOs survey and 34% of the organizations contacted in the CEO survey claim to be using Electronic Commerce. According to CIOs, accounting and customer support/after sales are the key areas where Electronic Commerce is being used. 51% of the organizations effect about

1000 to 99,999 Electronic Commerce transactions in a year. 22% say the rupee value of Electronic Commerce transaction is over Rs1, 000,000.

B.6 Not Many are Prepared

Only 20% of the organizations covered under CIO segment are saying they are trying to use Electronic Commerce at least to some extent. 80% of the industry is in the process of gearing up for the show. Banks want to wait and watch while sectors like IT and Courier/travel/transport are the forerunners. Currently, E-mail and Internet are the technologies used. Intranet, Extranet, EDI would be seen within two years time and ATM, EFT, Digital checks, Smart cards by next 5 years.

B.7 Industry Feels the Medium is Promising

Industry is optimistic about Electronic Commerce and sees a potential of around 10-12% of their yearly turnover coming from Electronic Commerce by the next two years and over 17% by the next five years. But the service industry, which is running high on this note, can change the dynamics for better.

B.8 Those Using IT Extensively will Take Up Electronic Commerce

Over 82% of MNCs believe themselves to be good/excellent users of IT as against (66%) of Indian private companies. Banking (67%) and IT companies (97%) believe themselves to be good/excellent users.

Faster execution (78%) and Better customer service (71%) are the two most perceived benefits of IT usage.

Finance, Corporate and Operations are amongst the heavy users of IT. Sales/marketing, servicing and distribution are amongst the medium users, whereas HRD/Administration. R&D and Production are amongst the light users.

Over 50% of those either using or likely to use Electronic Commerce are also amongst those who maintain IT spends have either paid much more than or are adequate to the investment made.

B.9 ERP, EDI and Internet

21 % of the organizations surveyed have already implemented the technology and another 31% are planning to implement it in the next 1-2 years. They are mainly manufacturing companies.

23% of the organizations contacted have or are planning to deploy EDI. They are mainly Banks, IT, Courier, Travel and Shipping companies.

Internet is currently used for communication purpose only. Email messaging (78%), FTP (44%), Web site monitoring (48%). Amongst those having a web site, 84% use it for advertising while 38% say they are selling products and services through web site. Over 55% do not have a security feature or firewalls on their web site.

B.10 Lack of Skill Training Impedes Implementation of IT

Lack of skill/training within company (28%) and lack of funds (24%) are the factors impeding the implementation of IT in companies. Most of them are from traditional businesses like manufacturing, travel, transport, education etc. Banks complain about the lack of vision of the top management.

B.11 It's not the Business/Trading Partners

Lack of proper commercial and legal system for conducting business electronically (26%) is the main barrier for the adoption of Electronic Commerce. Security, lack of proper and secure payment structure, legal issues: clear fix on contracts, liabilities in the digital economy and trust and assurance are the main concerns.

B.12 Government should Promote Electronic Commerce

Spreading awareness and benefits of Electronic Commerce and its benefits, enacting cyber laws, developing a strong communication infrastructure are the key domestic roles for the government.

B.13 Internet is fine but what does Electronic Commerce mean for Households?

A small proportion of PC Owners (26%) and Non owners (15%) are aware of Electronic Commerce. Perception about Internet is rich with it being identified as a

source of information, communication, learning and entertainment but relatively few amongst both the segments feel that it is a source of purchasing products and services.

B.14 Households are Shaky about Buying Over the Net

A very high proportion amongst PC Owners (62%) and PC Non-owners (75%) said they would not like to buy through the net. The reasons are they are not sure of quality and delivery of products. They need to feel the products and bargain to buy them. Many do not understand this new method of buying and selling in a digital environment.

B.15 Computers are not Bought for Browsing Internet

Browsing the Internet and purchasing products through Internet are amongst the least important perceived benefits of owning a computer. Business, learning (self) & education for children were the main reasons to purchase a computer.

3.4 Methodology of Data Collection[52]

The methodology of data collection has been taken from C.R Kothari a book on Research Methodology Methods and Techniques in which the research methodology, research problem, research design, sample design, measurement and scaling techniques, methods of data collection, processing and analysis of data, sampling fundamentals, testing of hypothesis, interpretation and report writing has been given.

For details please refer the book which is mentioned above.

3.4.1. Present Models of Electronic Commerce

Electronic commerce tends to mean different things to different people. Moreover, Electronic Commerce has so many difference components that there is clearly a need to categorize them systematically. Models or frameworks offer grater clarity in the study of many areas of research. In the study of Electronic Commerce, however, it is common to find the words' model' or 'framework' used in an imprecise way or when referring only to internet-based Electronic Commerce.

There are a number of existing models, which make an attempt to provide a framework than can be used by others to define or understand the breadth and scope of Electronic Commerce.

Model 1- Zwass's Hierarchical Framework

Zwass[53] presented a very comprehensive hierarchical framework of Electronic Commerce, consisting of three mete-levels: infrastructure, services, and products and structures and seven functional levels, which range from wide- area telecommunications infrastructure to electronic marketplaces and electronic hierarchies.

Meta - Level	Level	Function	Examples
Products and Structures	7	Electronic Marketplaces and Electronic Hierarchies	Electronic Auctions, Brokerage, Dealership and Direct Search Markets. Inter-Organizational Supply- Chain Management
	6	Products and Systems	Remote Consumer Services (Retailing, Banking, Stock Brokerage) Infotainment- on Demand)Fee-Based Content Sites, Educational Offerings) Supplier- Customer Linkages On- Line Marketing Electronic Benefit Systems Intranet- and Extranet- Based Collaboration
Services	5	Enabling Service	Electronic Catalogs/ Directors, Smart Agents Elecon- Money, Smart- Card Systems Digital Authentication Services Digital Libraries, Copyright- Protection Services Traffic Auditing
	4	Secure Massaging	EDI, E-Mail, EFT
Infrastructure	3	Hypermedia / Multimedia Object Management	World Wide Web with Java
	2	Public and Private Communication Utilities	Internet and Value-Added Networks (Vans)
	1	Wide-Area Telecommunications Infrastructure	Guided- and Wireless-Media Networks

Fig 3.5: Showing the Hierarchical Framework of E-Commerce (Zwass1998)

This model clearly builds upon the work undertaken by the developers of the various "layered network protocols" architecture ", or " architectures" which have been developed to explain the inter-connection of telecommunications networking, such as the OST Reference Model, or IBM's SNA model-which use similar" layering approach, where each layer has a clearly defined area of functionality. This separation of tasks means that a change at one layer does not normally affect the other layers, with significant positive implications for software developers. The use of a similar approach to analysing E-Commerce would have equivalent benefits in terms of separating out tasks and enabling solutions to be developed without impact on other E-Commerce activities. This disadvantage of this approach, however, is that there is less flexibility because of the sequence of the layers.

We believe that the components of Electronic Commerce are constantly changing over time and as particular technologies are pressed into service. The layering approach, which works very well for networking, where the functions and activities can be fully described and do not evolve outside the limits of the model, are thus less applicable to the very mutable functions and activities of E-Commerce, but is not itself the whole of this field of study. We do, however, believe that this model has much to offer to those who are investigating the technologies of Electronic Commerce.

Model 2- Kalakota and Whinston's "Pillars" Framework

Kalakota and Whinston[54] have also developed a generic approach to approach to providing a framework for Electronic Commerce. Using a very different scheme from that taken by Zwass, they use the metaphor of " pillars " (public policy and technical standards), to support four infrastructures (network, multimedia content, messaging, and common business services) on top of which they place E-Commerce Application. These authors suggest that the elements of a framework for E-Commerce are a convergence of technical, policy and business concern. This model is simple to understand and visually attractive- but it lack theoretical depth and is not particularly useful for researchers endeavoring to incorporate into empirical research projects.

We believe that this model is useful for those who are approaching Electronic Commerce for the first time- but do not feel that it can be used as a foundation for more detailed analytical study.

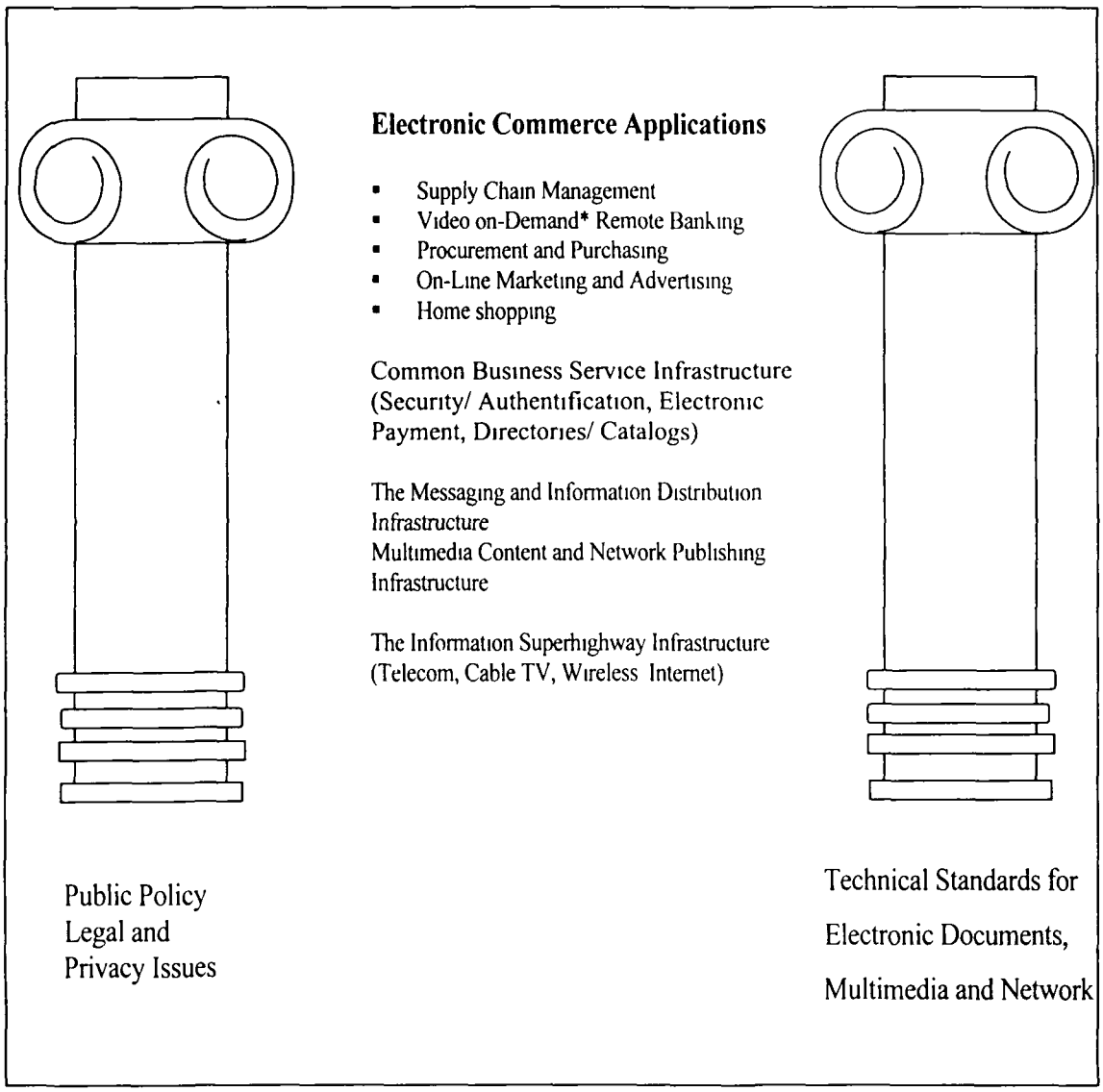

Fig 3.6: Showing Generic Framework for Electronic Commerce (Kalakota & Whinston 1996)

Model 3- Riggins and Rhee,s domain Matrix

Riggins and Rhee[55] have used the Harvard matrix approach to identify a view of E-Commerce based upon type of relationship and internal / external focus. This descriptive framework takes as its axes the "location of the application user" and "type of relationship " thus essentially distinguishing between intranet-based application and those which use either an extranet or the public internet to provide access to the application concerned. Such a model is clearly useful to companies which wish to classify their trading partners into internal and external and, within these, into new and ongoing relationships-it categorizes which can be helpful in identifying relationships and technology needs.

Despite these useful characteristics, however, the model is limited in its identification of E- Commerce types being primarily focused upon relationships. It would be more difficult to use such a model in the development of, say, a government – sponsored virtual community.

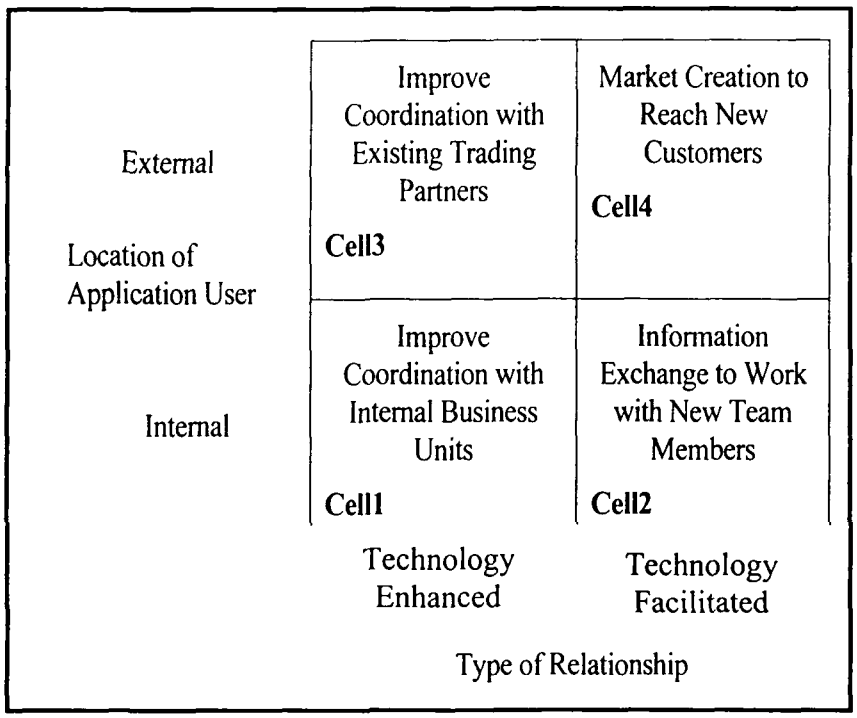

Fig 3.7: Showing Electronic Commerce Domain Matrix (Riggins & Rhee 1998)

Model 4- Clarke's Five Phase process Model

Clarke[57] describes a five-phase process model of Electronic Commerce designed to support the different phases of a business transaction. Clarke notes that in this model, it is: "difficult to have conventional tools of analytical research." His model is an extension of an earlier, EDI-based model and is strongly focused on procurement (buying an selling) rather than on any of the other components of E- Commerce, which limits its general applicability.

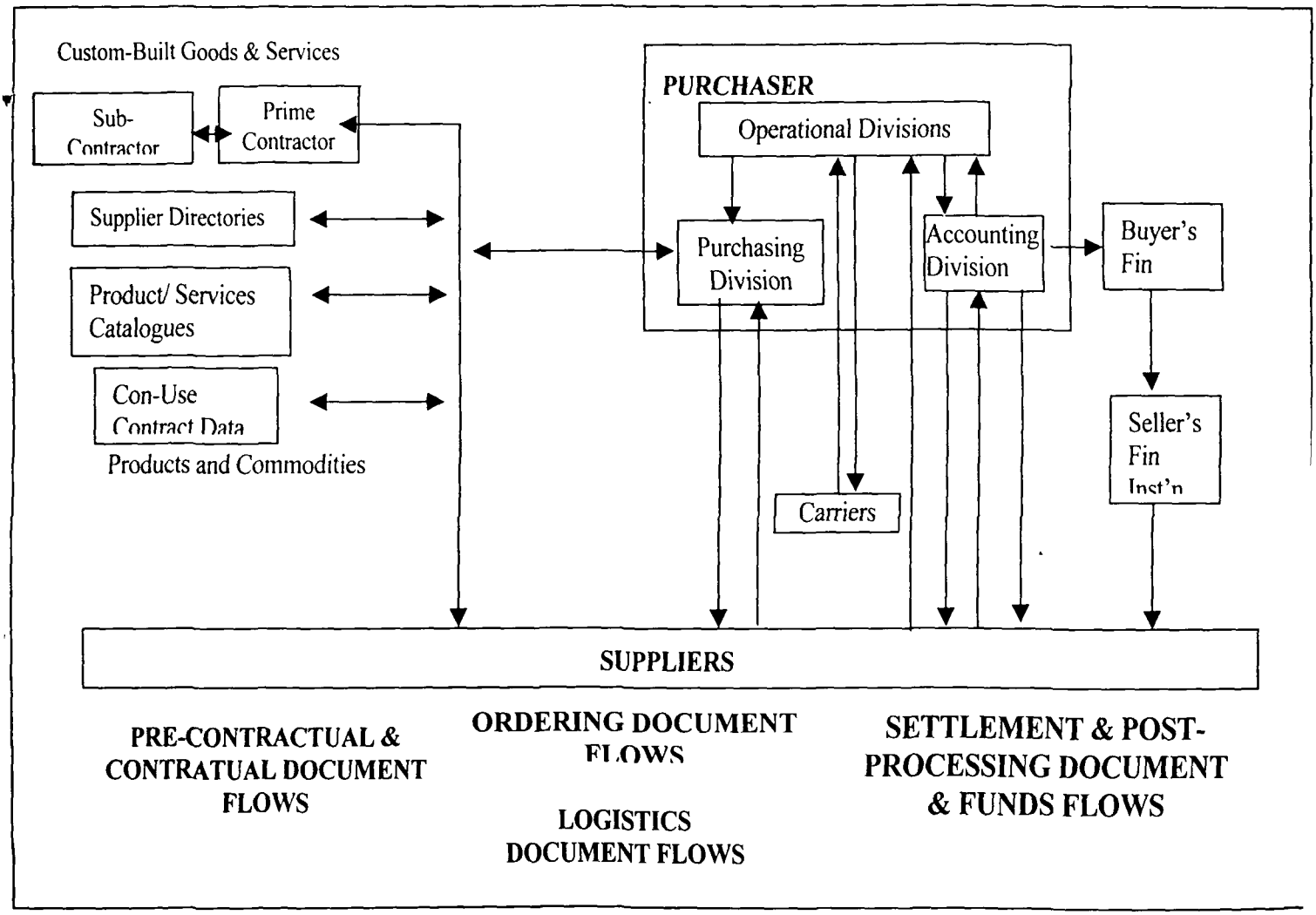

Fig 3.8:Phases of Electronic Commerce (Clarke 1993)

lllllClark's model is well designed for analysing the issues involved in procurement – both in terms of the stages of the purchase and the activities involved in the transaction. It does not, however, offer especially useful insights into the emerging " cyber-services" sector and is not designed for such E-Commerce activities as virtual communities or E-health (except where these broad areas involve purchase and delivery of physical goods and services).

Model 5- Wigand's Typology

Wigand[58] identifies a number of criteria, which can be used to define a typology of Electronic Commerce. The components of this typology range from an-way telescoping broadcasts via cable satellite television channels, through automated electronic markets, to electronic shopping on the internet market maker with a set – top box in the consumer's home. Wigand's Electronic Business on the basis of their electronic interactive capabilities and does not reflect the full range of Electronic Commerce virtual communities and offers only limited usefulness to those investigating the various aspects of-health service offerings.

Type of Electronic Commerce, by increasing electronic interactive capabilities	Buyers' deliberate choice/decision at time of transaction	Automat ized buying transacti ons	Degree of interactivity	Buying choice/ decision made by computer / software on behalf of buyer	Direct buying choice / decision made by human	Potential for full fledge electronic market	Role of market maker
Teleshopping via television (e g QVC)	Yes	One – way only	Limited, one-way	No	Yes	High and successful but only partially electronic	High
Automated market (A) Simple, largely automated transactions (e g EFT, EDI, SWIFT, valued added services)	Yes and No	Largely Yes	High	Largely Yes	No	Limited, only transaction and processing system	Small
Automated Market (B) Simple transations with some human Choice/ decisions required (e g SABRE, APPOLLO, Stock market transactions)	Yes	One-way only	High	Generally no	Yes	High and successful	Medium
Mobile and wireless cellular phone/PCS-based application (e g construction industry)	Yes	No	High	No	Yes	High	Small
Electronic shopping (e g via Internet, WWW)	Yes	No	High	No	Yes	High	High
Full-fledged electronic commerce utilizing electronic market maker with market-choice box (e g available in the future via 500 cable television systems, phone, maybe wireless, etc)	Yes	Mainly one-way only	High	No	Yes	High	Very High

Fig 3.9: Showing An Electronic Commerce Typology (Wigand 1995)

The Electronic Commerce Component Model (ECCM

It is clear that, while all these models are useful in specific circumstances, none is capable of providing an inclusive definition of E-Commerce types, activities and capabilities. Yet such an inclusive model is clearly required for effective analysis of the range of Electronic Commerce activities in both product and service terms.

We have, therefore, attempted to design a more comprehensive model, which will cater for the increasingly wide and varies types of E-Commerce available – a model which we call the Electronic Commerce Component Model. In this model we have included not only Internet- based E-Commerce, but also those primarily EDI- based business-to – business virtual communities sector of the E-Commerce "market-space".

Zwass classified E-Commerce into 3 meta-level: infrastructure, services and products and structures. Kolkata and Winston stated that Electronic Commerce is supported by four infrastructures: network, multimedia content, messaging and commune business services. Adam et al[59] stated that Electronic Commerce is an interdisciplinary field of technical, business and legal issues. Having considered their views, we derived our starting-point, i.e., the Electronic Commerce Component Model begins with the identification of the scope E-Commerce providing a "meta –view" of the Electronic Commerce world. We have identifies three components at the meta-view level- illustrated in Figure 3.10 – legal, services and infrastructure.

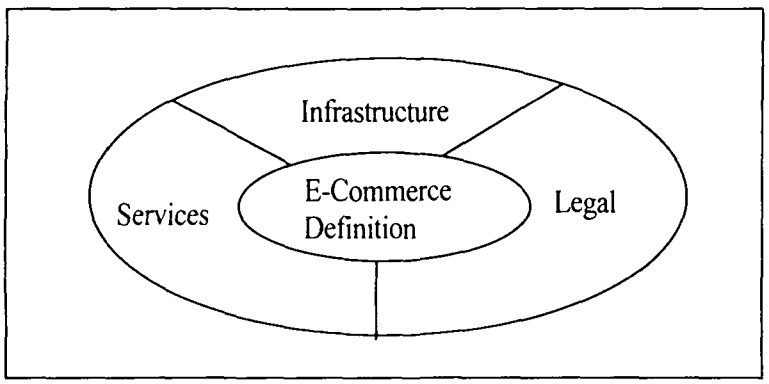

Fig 3.10: The Meta-View of E-Commerce

The following table identifies the objects, which might be contained within each component of the meta-view.

Meta-view level Components	Objects within each component
Infrastructure (Technical)	▪ Telecommunications/ Network technologies (wireless/ wire transmission) ▪ Multimedia application ▪ Internet/ intranet/ extranet ▪ Web page development (html, java, perl) ▪ Web page browser (Netscape, IE, lynx) ▪ Simulation ▪ Data mining/ warehousing ▪ Security of Information ▪ EDI ▪ Database management ▪ Client/ server, web server maintenance ▪ Internet Service Provider ▪ Human Computer Interface ▪ Smart Card devices ▪
Legal	▪ Internet payment Systems (EFTPOS, EFT) ▪ e-publishing ▪ Procurement (e-catalogues) ▪ Types of services (business-to-business, customer-to-business, intra-business) ▪ Information kiosks (library, airline, weather forecast) ▪ On-line Shopping ▪ On-line Education ▪ Other Internet Commerce activities

Fig 3.11: Showing Composition of the ECCM

Despite its limitations, however, this model is dynamic allows for all the different types of people and activities involved in E-Commerce- and also caters for the inevitable change which time and technology will bring to the development of E-Commerce. The components can be easily added or deleted whenever necessary and the model's flexibility makes it useful for both cross- sectional and longitudinal studies

The drawbacks of Electronic Commerce Component Model primarily involve the difficulty of calculating the weights to be applied to each object. The level of subjectivity

involved is problematic into this process. Clearly, this aspect of the model will be our primary focuses as we refine and extent the concept over the next few months.

Electronic Commerce is a affecting (and certainly will affect) the whole gamut of business and government activities. It is therefore essential that researchers and users have access to a model to represent the full range of E- Commerce activities.

While there is no doubt that information Technology is a major factor in the development of E-Commerce generally (and the ECCM specifically), other business disciplines such as accounting finance, law and management also provide an important part for the At present, research and practice in Electronic Commerce is tending to identify it as a separate area of study- but over the next few years, it will become more and more common to see instead a focus upon the E- Commerce aspects of the major business disciplines and the implications of E-Commerce for business reengineering.

3.4.2 Case Studies[59]

There are some case studies, which highlight the benefits of Electronic Commerce in the organisation after they adopted this new technology. The studies are presented in the following framework. There is introduction to organisation, which follows the benefits accured to the organisation. The organisations are:

A. Federal Express
B. Cisco Systems
C. Dell Computer Corporation
D. Boeing
E. Garden Escape
F. W.W. Grainger
G. General Electrical

A. Federal Express

A number of delivery and logistics companies, including Federal Express, the United Parcel Service (UPS), the U.S. Postal Service and others are using the Internet in key business processes. The example of Federal Express illustrates the role played by the Internet and private networks in improving efficiency and customer satisfaction.

Federal Express (FedEx) delivers 2.5 million packages daily to 211 countries around the world with an on-time delivery rate of 99 percent. Electronic commerce has been at the heart of FedEx's operations for more than a decade. Back in the mid-1980s, the company rolled out a program called FedEx PowerShip® that gave its major customers a window into FedEx's computer systems. Employees at shipping docks could place orders for package pick-up directly into their FedEx PowerShip terminals, automate the paperwork and track the status of their orders electronically.

Benefits

FedEx's proprietary network forms the underpinning of the company's electronic commerce today. The Internet extends the reach of the proprietary network, electronically connecting customers that had communicated with FedEx by phone, paperwork or not at all in the past. And, as more companies sell tangible goods over the Internet with the promise of quick delivery, FedEx benefits from increased business opportunities.

For competitive reasons, FedEx has not publicly shared the full extent of benefits it has realized from information technology and electronic networks, except to say that it has

enabled FedEx to continuously lower its cost to deliver each package. They point to some examples:

• **Avoided Costs:** If not for FedEx PowerShip®, FedEx would have had to hire an additional 20,000 employees to pick up packages, answer phone calls at the call centers and key in air bills. With PowerShip®, a good deal of the routine tasks are automated or transferred from FedEx to the customer. Couriers spend less time recording information at the customer's site, and phone service representatives spend less time answering calls from customers who now place orders and track their own shipments online.

• **Lower Operating Costs:** Customers use FedEx InterNetShip® to track over 1 million packages per month (and the volume increases at double-digit percentage levels month to month). Approximately half of those calls would have gone to FedEx's toll-free number instead.

• **Better Customer Service:** Customers still have a choice for how they interact with the company, whether by phone, fax or other means. Nearly 950,000 of them find it easier and more convenient to communicate with FedEx electronically.

B. Cisco Systems

Cisco Systems sold $6.4 billion worth of routers, switches and other network interconnect devices during its 1997 fiscal year. As its business forms the underpinning of the Internet and private networks, it is perhaps not surprising that Cisco should be a leader in using the Internet to make its business processes more effective. From employee self-service stock options, training seminars and work team collaboration to customer service and ordering, the company continually develops new applications for business processes that it feels can be better done online than otherwise. It avoids "mega" projects. New applications are generally created within three to six months.

Cisco's Web site has evolved over several years, beginning with technical support for customers and evolving into the world's largest Internet commerce site. Today, Cisco offers nearly a dozen Internet-based applications to both end-use customers and reseller partners.

Benefits

In total, Cisco estimates that putting its applications online has saved the company $363 million per year, or approximately 17.5 percent of total operating costs. With 70 percent of its technical support and customer service calls handled online, Cisco's technical support productivity has increased by 200-300 percent per year, translating to roughly $125 million lower technical support staff costs. Customers download new software

releases directly from Cisco's site, saving the company $180 million in distribution, packaging and duplicating costs. Having product and pricing information on the Web and Web-based CD-ROMs saves Cisco an additional $50 million in printing and distributing catalogs and marketing materials to customers.

C. Dell Computer Corporation

Dell's computer business was founded on concepts that bucked conventional wisdom. While the rest of the industry was building personal computers to stock, and selling them through value added resellers, distributors and retail stores, Dell was creating a new business model. Dell would build to order and sell the computers through its own sales force, mail order and telephone center.

This way, distribution and retail markups common in the traditional channel would be avoided and Dell's inventory carrying costs would be much lower.

As of December 1997, Dell was the second largest supplier of desktop PCs, with 9.7 percent of the market and a 10-15 percent price advantage versus its major competitors who distribute their products through the indirect channel. Dell saw the advantages of the Internet and began exploiting them before others in its industry.

Benefits

• **Additional Revenues:** Eighty percent of the consumers and half of the small businesses who purchased on Dell's Web site had never purchased from Dell before. One out of four say they wouldn't have purchased if it wasn't for the Web site. And, their average purchase is higher than Dell's typical customer.

• **Lower Sales/Marketing Costs:** Dell's Web site gives enough product, pricing and technical support to help guide a customer through the purchasing process—information customers previously accessed by calling a telesales representative. As a result, Dell has been able to generate an increased sales volume to its consumer market with lower labor costs. Dell expects that its advertising costs should also be lower for its Internet customers, as 30 percent of these customers had not seen a Dell ad, yet still bought online.

• **Lower Service/Support Costs:** Dell saves several million dollars each year by having basic customer service and technical support functions available on the Internet.
Each week, about 20,000 customers use the Web site to check their order status. Some percentage of these would have come into the call center, at a cost of $3-5 per call. If just 10 percent of these customers had called rather than using the online service, those 2,000

calls would have cost Dell $6,000-$10,000 per week. 30,000 software files are downloaded each week from Dell's site. Answering these requests by phone and then sending each customer the software by mail would cost $150,000 per week.
Customers who access troubleshooting tips online save Dell a $15 call to a technical support person. If 2-3 percent of the 30,000-40,000 technical information queries the Web site receives each week had reached Dell's technical support staff; it would have cost an additional $9,000-18,000 per week.
One large customer in the auto industry reports saving $2 million in its own technical support "help desk" costs. Rather than calling up Dell's telephone support center and usually holding for about 3-5 minutes, they go to Dell's Web site for help.

• **Enhanced customer relationships:** perhaps the greatest potential Dell sees for the Internet is its ability to enhance the company's relationship with its customers. Ultimately, one-tone marketing and tailored customer service can be used to shorten a customer's repurchase cycle and allow them to sell more into corporate accounts. When a customer first boots up her computer, the computer introduces her to the "Dell Channel," a customer service feature tailored specifically to that customer's computer model and particular configuration. Dell believes that the ability to tailor customer service solutions and product offerings to individual customers will improve customer service and satisfaction and open up new selling possibilities.

D. BOEING

Boeing's online strategy is to provide a single point of online access through which airlines and maintenance providers can "pull" the data needed to maintain and operate airplanes, regardless of whether the data is from the airframe builder, component supplier, engine manufacturer, or the airline itself. With data from all of the 300 key suppliers of airplane parts (and a growing base of data for the key engine manufacturers), Boeing's goal is to provide its customers with one-stop shopping for online maintenance information.

Benefits

• **Increased productivity:** spending less time searching for information frees up engineers and maintenance technicians to focus on more productive activities. One U.S. airline saved $1 million when it gave 400 users access to Boeing's REDARS program. Seeing the results of the initial implementation, the airline expanded the service to 2000 users. A European airline estimates that it will save $1.5 million from BOLD in the first year due to a nearly 4 percent boost in production and engineering staff productivity.

• **Reduced costs:** with information available online at the gate through PMA rather than back in the crew office, delays at the gate due to missing information can be reduced. The European airline mentioned above estimates that PMA will reduce delays by 5-10 percent on flights using newer Boeing aircraft.

• **Increased revenues:** every 3000 hours, an airline does a schedule C maintenance check which can keep an airline grounded for up to a week. Not having information readily available can extend the process. The longer the maintenance check, the less revenue opportunity. Through BOLD and PMA, the European airline estimates it will save 1-2 days/year for each aircraft, resulting in $3 million in incremental revenue.

E.GARDEN ESCAPE

Born of the World Wide Web, Garden Escape offers gardeners a selection of thousands of seeds, perennials, roses, bulbs, greenhouses, tools and other products from around the world from which to choose. Serious gardeners can use online software tools to design their ideal garden. Garden Escape has an online magazine, a chat room, and daily tips from the magazine's editors. Questions about horticultural terms can be answered with the help of the online glossary, or by calling Garden Escape's toll-free number. If the customer service representative does not know the answer, he will contact an expert who will send the customer a reply by e-mail. Although not required, about 150,000 people have registered with Garden Escape in order to benefit from extra member services. Members can save graphic layouts of gardens, create a personalized notebook to keep track of their favorite varieties, planting instructions, and any other important notes. A variety of other personalized services are also available, including a gift registry and important-date reminder, personal shopper, order status, and an out-of-stock reminder service. As the founders see it, the key to Garden Escape's eventual success is its ability to leverage the unique advantages the Internet brings. If Garden Escape simply duplicated what people could get at their local nursery, the business would not be very compelling. Instead, the site has to offer customers a shopping experience they could not easily duplicate (or duplicate at all) through traditional sources.

Garden Escape founders started by taking an inventory of all the resources a gardener uses today: nurseries and seed catalogs for plants and tools, other retailers for specialty outdoor products; books and magazines for tips on the plants and flowers that flourish or perish in certain soil and climate conditions; clubs where hobbyist gardeners share suggestions with other enthusiasts; and the extensive array of catalogs, books and CD-ROMs that help with garden design. They provide published information from horticultural experts, and using the interactive features of the Internet, they create online environments for gardeners and horticultural experts to share ideas and gardening tips.

Automated customer service saves Garden Escape money and leads to new sales opportunities. Each time Garden Escape replies to a customer's question, it stores both the question and answer in a database. That way, the knowledge base continues to expand and customer service staff (and customers in time) can search the database online and receive immediate answers. Garden Escape believes this will not only make customer service more efficient and effective, it also has the potential to generate revenues. About half of the company's purchase orders are transmitted to its growers by e-mail or fax. The other halves are communicated over an extranet.

F.W.W. GRAINGER

Seventy years ago, William Wallace Grainger saw an opportunity to launch a business distributing electric motors. During the 1920s, factories were converting from one large, direct current motor powering their entire assembly line operation to multiple motors using alternating current. Using a simple 8-page wholesale catalog, the MotorBook, and postcards for direct mail, Grainger began receiving and filling customer orders. Through the years, more products were added to the MotorBook as customers needs grew for a quick and convenient supply of maintenance, repair and operating (MRO) supplies.

Today, W.W. Grainger, Inc. is the leading distributor of MRO supplies and related information to the commercial, industrial, contractor and institutional markets in North America. The company is headquartered in Lincolnshire, Illinois, with operations throughout the United States and Canada, and in Mexico and Puerto Rico. In 1997, sales exceeded $4 billion. The company's numerous business units focus on serving the diverse MRO needs of more than 1.3 million customers.

The company's largest business unit, Grainger, operates through a network of national, regional, and zone distribution centers and 350 branches nationwide. Customers can place orders for MRO products via phone, fax, EDI or online over the Internet. Orders are available for same day pickup at the local Grainger branch, or next day delivery. Grainger also provides product and service solutions to customers through its 1,600 person sales force. The MotorBook, now known as the General Catalog, continues to be a primary marketing tool for the company. The 1997 edition of the catalog is over 4,000 pages in length and contains about 80,000 products.

A key element in the growth and success of the company has been the dedication to process improvements and information systems enhancements. Computer systems were first introduced at the branch level in the 1970s. A satellite communications network was implemented in 1989 linking each branch with a network control center, enabling the instantaneous transmittal of information between the branches and distribution centers. This enhancement allows customers to call the nearest branch for complete product availability and pricing information. Today, Grainger customer service agents can check the inventory on-hand in that branch as well as all the other branches and distribution centers across the United States. The customer's order is now handled with one phone call. Having this information online has boosted both the company's service level and asset utilization. In 1997, the company further improved its communications systems with the introduction of a land-based frame relay communications network. Frame relay is faster and more reliable than the satellite system it replaced.

In spring 1995, Grainger launched its Web site, giving small and medium-sized businesses the ability to search and order from its online catalog, check product availability and pricing, and set up rules for who in the company is authorized to make a purchase from the Web site. Customers an identify and select products, check pre-negotiated account prices and determine product availability without leaving their desk, making a phone call, or generating a single piece of paper. Not only does the site offer customers greater convenience, it also offers greater selection. Through its traditional paper catalog, Grainger has a standard product offering of about 80,000 products. Its Web site has a selection of nearly 200,000 products. In the future, Grainger plans to significantly expand its Internet product offering by partnering with other "best of class" suppliers. Revenues from the Web site have been growing 100 percent quarter over quarter. More than 30 percent of Grainger's online sales are to new customers or incremental sales to existing Grainger customers. Because the virtual branch is open 7 days a week, 24 hours a day, customers who would not otherwise be able to order from a Grainger are now able to do so. In fact, more than 50 percent of all orders are placed after 5 PM and before 7 AM when the local branch is closed.

The Internet, intranet, extranet and private networks will allow GiSO employees to continue to leverage information in the execution of their jobs. This leverage and the

elimination of redundant activities in the supply chain have enabled GiSO to grow at more than three times the rate of Grainger's traditional distribution business over the last two years.

G. General Electric

General Electric's material costs increased 16 percent between 1982 and 1992, while GE's pricing remained flat and then started to decline. In response to these cost increases, GE began an all-out effort to improve its purchasing. The company analyzed its procurement process and discovered that its purchasing was inefficient, involved too many transactions and did not leverage GE's overall volumes to get the best price. More than one-quarter of its invoices (1.25 million invoices) had to be reworked because the purchase order, receipt and invoice did not match. Since the review, GE has taken a number of steps to improve its purchasing, the most recent of which involve the Internet.

Factories at GE's lighting division used to send hundreds of requisitions for quotations (RFQs) to the corporate sourcing department each day for low-value machine parts. For each requisition, the accompanying blueprints had to be requested from storage, retrieved from the vault, transported on site, photocopied, folded, attached to paper requisition forms with quote sheets, stuffed into envelopes and mailed out. This process took at least 7 days and was so complex and time-intensive that the sourcing department normally only sent out bid packages to two to three suppliers at a time.

In 1996, GE Lighting piloted the company's first online procurement system, TPN Post, an extranet developed by GE Information Services. Now, the sourcing department receives the requisitions electronically from its internal customers and can send off a bid package to suppliers around the world via the Internet. The system automatically pulls the correct drawings and attaches them to the electronic requisition forms. Within 2 hours from the time sourcing started the process, suppliers are notified of incoming RFQs by email, fax or EDI and are given 7 days to prepare a bid and send it back out over the Internet to GE Lighting. A bid can be awarded the same day GE receives and evaluates it.

As a result of implementing TPN, GE has realized a number

Benefits

• 60 percent of the staff involved in procurement have been redeployed. The sourcing department has at least 6-8 additional days a month to concentrate on strategic activities rather than the paperwork, photocopying and envelope stuffing it had to do when the

process was manual.

• Labor costs involved in procurement declined by 30 percent. At the same time, materials costs declined 5-20 percent due to the ability to reach a wider base of suppliers online.

• It used to take 18-23 days to identify suppliers, prepare a request for bid, negotiate a price and award the contract to a supplier. It now takes 9-11 days.

• With the transaction handled electronically from beginning to end, invoices are automatically reconciled with purchase orders, reflecting any modifications that happen along the way.

• Procurement departments across the world to share information about their best suppliers. In February 1997, GE Lighting found seven new suppliers via the Internet, including one that charged 20 percent less than the next-highest bid.

GE reports that TPN benefits extend beyond its own walls. A computer reseller, Hartford Computer Group, reports that since joining TPN, it has increased exposure across the different GE business units—so much so that its business with the company has grown by over 250 percent. At the same time, TPN has introduced Hartford Computer Group to other potential customers. As of October 1997, eight divisions of General Electric use TPN for some of their procurement. The company bought more than $1 billion worth of goods and supplies via the Internet during the year. By 2000, the company aims to have all 12 of its business units purchasing its nonproduction and maintenance, repair and operations materials (MRO) via the Internet, for a total of $5 billion. GE estimates that streamlining these purchases alone could save the company between $500-$700 million annually.

3.4.3 Data Collection in Present Research

3.4.3.a Sampling Procedure
3.4.3.b Administration of Questionnaire
3.4.3.c Testing and Follow Up

3.4.3.a Sampling Procedure

Nearly every survey uses some form of sampling. It simply means taking part of some population to represent the whole population. The main reason for sampling is economy. To survey every individual in a population using enumeration is ordinarily mush too expensive in terms of time, money and personnel. There's really no need to survey every individual. Only a small fraction of the entire population usually represents the group as a whole with enough accuracy to base decisions on the results with confidence. While sampling is extremely practical and economical, it has to be done correctly or it will introduce bias or error in the results. The sample must be selected properly, or it won't represent the whole. It has to be large enough to meet the requirements for reliability- but not too large, or it will waste resources. The researcher typically has several options regarding the basic sampling design:

Random- Every sample unit in the population has an equal chance of being selected. The sample represents the population well. The probability of sampling error can validly be computed statistically.

Stratified- The proportion of various types of sample units in the sample is controlled by selecting a series of subsamples of specified sizes.

Clustered- A series of physical or geographic areas are selected then a specific number of sample units are selected proportionally from each "cluster".

Convinience-Some sample have a greater chance of being selected than others. The sample's representation of the population is inferior. It's invalid to compute the probability of sampling error.

Unstratified- The proportions of various types of sample units will be approximately the same in the sample as they are in the entire population.

Unclustered- Respondents are selected randomly (or by convenience) regardless of their physical or geographical location.

Regardless of the basic sampling design the researcher must decide how the respondents will be selected.

In our survey respondents were ask to rank the Impact of Electronic Commerce on the ten Business Value Components by sending e-mails with attached questionnaire or by post companies mentioned in Business Today Sept 7, 1999, Corporate Banks mentioned in Business Today Dec 6, 1999, Indian B2B and B2C sites, Banglore based IT companies, Indian Top 50 IT Companies, University Research Centres of Electronic Commerce. Details of these sources have been prescibed in Appendix IV.

3.4.3.b Administration of Questionnaire

The survey questionniare employed in this study was adapted from a paper on the Road of Electronic Commerce –a Business Value Framework, Gaining Competitive Advantage and Some Research Issues by Michael Bloch, Yves Pigneur and Arie Segev, March 1996. The paper proposed a framework consisting of ten components of the business values of EC showing how they can improve, transform or redefine current products, processes or business models.

From these ten components of business value respondents were asked to rank the extent to which these components were applicable the organisation they represent one having the minimum and five maximum impact, (NA if not applicable). Each component had five questions. In this way there were fifty questions of the ten components. Respondents were also asked to mention their annual turn over, percentage of annual IT spending, percentage of EC spending and the type of organisation they represent.

3.4.3.c Testing and Follow Up

To collect the data from the respondents we have adapted two methods. Fistly by sending e-mails with attached questionniare and secondly by posting to the companies. After getting questionnaire filled from the 17 respondents, minor modifications were made. Three items were deleted and four new were added. Thereafter 1523 e-mails with attached questionnaire were sent, 88 questionnaires were sent by courier. The response to first time and subsequent mails sent is as follows:

E-mails sent ...1523.

First time responded...31.

Reminders e-mails sent ...1502.

Responded ...77.

Questionnaire posted...88.

Responded...27.

It may please noted here that the response rate was the highest from those respondents who were associated with A.M.U in one way or the other else industry in general hardly has shown any interest in the response activity.

After receiving feedback from respondents a note of thanks has also been forwarded as they took time and pain for our research work.

3.5 Methodology of Data Analysis

The present study is based on the objectives as mentioned in the previous section. In order to achieve the objectives of the study, purposive sampling technique was used. To get the primary data, questionnaire was designed which was partly structured in the light of the objectives of the study.

The collected primary data have been processed and analysed using MS Excel in the form of tables and graphs. To start with overall mean of various scores was taken. The mean was, and then was compared with the mean of different Components of Business Values. The comparison could have resulted in difference between population mean and the mean of specific segment of population. In order to know that this difference was statistically significant or not, popular test such as 'Z' and 'F' tests were applied. These tests were applied using MS Excel. The calculated figures of comparatives mean were then compared with the ones given in the table. Significantly different means (if any) were reported.

At the end of thesis, on page number 217-218 a master chart shows the values of all the results of 'Z' test and 'F' test.

3.5.1 Research Techniques in Electronic Commerce[60]

This section provides a brief overview of each of the three major research techniques

3.5.1.a Conventional Scientific Research

3.5.1.b. Interpretivist Research

3.5.1.c Engineering Research

3.5.1.a Conventional Scientific Research

Conventional scientific approaches to research were developed over several centuries in the context of what are now referred to as 'the physical sciences'. It has been co-opted by 'the social sciences', which can be loosely depicted as being those whose domains of study include agents that exercise free will, or at least appear to do so. Some information systems research is close to the realm of the physical sciences; but most of it sits squarely within the social sciences. Conventional science adopts the assumption that there is a real world, comprising objects and processes. This real world cannot be directly understood by humans, nor 'captured' into human artefacts. However it can be observed. On the basis of observation of the real world, humans form theories as to how it came to be the way it is, and how and why the processes take place. In an applied discipline such as Information Systems, it is common to depend on theories borrowed from 'reference disciplines.

Theories should ideally be expressed in deductive form, such that a set of axioms or postulates, operated on by conventional deductive logic, lead to inferences.

In summary, conventional science consists of extracting new hypotheses from an existing theory, testing them, and adding the results to the pool of knowledge. It presupposes the existence of:

- a body of theory;
- an explicit theoretical framework to guide research;
- a defined research question;
- explicit refutable hypotheses; and
- a research method that applies well-defined research techniques in order to enable hypotheses to be tested.

3.5.1.b. Interpretivist Research

Conventional science is based on 'rational positivist' thought. This includes the presumptions that there is a 'real world', that data can be gathered by observing it, and that those data are factual, truthful and unambiguous. The 'post-positivist', 'interpretivist' philosophy, on the other hand, asserts that these assumptions are unwarranted, that 'facts' and 'truth' are a chimera, that 'objective' observation is impossible, and that the act of observation-and-interpretation is dependent on the perspective adopted by the observer.

Interpretivists criticise even the physical scientists for the narrowness of their assumptions. Their criticisms strike home particularly strongly in the social sciences, where the objects of study are influenced by so many factors, and are extremely difficult to isolate and control in experimental laboratory settings.

The interpretivist approach confronts the difficulties presented by the nature of the research domain, and in particular:

- the intangibility of many of the factors and relationships.
- the inherent involvement of the researcher within the research domain.
- the dependence of outcomes on the researcher's perspective.
- the selection and definition of the research domain.
- the selection and rendition of existing theory.
- the definition of the research question.
- the design of the research framework .
- the selection, definition and operationalisation of variables.
- the measurement of variables.

This leads to a requirement that multiple interpretations of the same phenomena must be allowed for, and that no truth is attainable.

3.5.1.c Engineering Research

Within the information systems segment of the computer science and engineering discipline, the research that is most directly relevant to electronic commerce is of an

engineering rather than a scientific orientation, and is essentially concerned with technology, including artefacts, techniques and combinations of both of them.

Information systems research undertaken within this tradition tends to be applied or problem solving in its orientation. It is of two broad types:

- the application, testing, stretching and breaking of information technology; and
- the conceptualisation, prototyping, construction, demonstration and application of new technology.

3.5.2 Data Analysis in Present Research

After collecting data on a five point scale (1) minimum and (5) maximum each answer was assigned a weight. he average of all the weights given by the respondents was taken. This was done for the entire sample followed by each subsection or group for example the mean of entire population was compared with the mean across different organisation, annual Turn Over, percentage of IT spending, percentage of EC spending.

In order to ensure that the results are statistically valid ANOVA test was applied.

For sample size within various sub group Z test was used when the number of respondents in a particular group were above 30 and where less than 30 we used F test

Tests of Hypotheses

Statisticians have developed several tests of hypotheses (also known as tests of significance) for the purpose of testing of hypotheses which can be classifieds as: (a) Parametric tests or standard tests of hypotheses, (b) Non Parametric tests or distribution – free test of hypotheses.

Parametric tests usually assume certain properties of the parent population from which we draw samples. Assumptions like observations come from a normal population, sample size is large, assumptions about the population parameters like mean, variance, etc., must hold good before parametric tests can be used. But they're re situations when researcher cannot or does not want to make such assumptions. In such situations we use statistical methods for testing hypotheses, which are called non-parametric tests because such tests do not depend on any assumption about the parameters of the parent population. Besides, most non-parametric tests assume only nominal or ordinal data; where as parametric tests require measurement equivalent to at least an interval scale. As a result, non-parametric tests need more observations than parametric tests to achieve the same size of Type-I and Type-II errors.

Important Tests

1- Z- Test
2- T-Test
3- X^2 Test
4- F-Test

1- **Z- test** is based on the normal probability distribution and is used for judging the significance of several statistical measures, particularly the mean. Z-test is generally used for comparing the mean of a sample to some hypothesised mean for the population in case of a large sample, or when population variance is known. Besides this test may be used for judging the significance of median, mode, coefficient of correlation and several other measures.

2- **T-test** is based on t-distribution and is considered an appropriate test for judging the significance of a sample mean or for judging the significance of difference between the means of two samples in case of small sample(s) when population variance is not known. It can also be used for judging the significance of the coefficients of simple and partial correlations. It may be noted that t-test applies only in case of small samples(s) when population variance is not known.

3- **X^2 test** is based on chi- square distribution and as a parametric test is used for comparing a sample variance to a theoretical population variance. X^2 test is also used as test of goodness of fit and also as a test of independence in which case it is a non parametric test.

4- **F-test** is based on Distribution and is also used to compare the variance of the two independent samples. This test is also used in the context of analysis of variance (ANOVA) for judging the significance of more than two sample means at one and the same time. It is also used for judging the significance of multiple correlation coefficients. Test static, F is calculated and compared with its probable value (to be seen in the F-ratio tables for different degrees of freedom for greater and smaller variances as specified level of significance) for accepting or rejecting the null hypotheses.

We have assumed that the difference between the mean of population and that of each subgroup of respondents is due to chance and has nothing to do with the number of respondents of sample size.

In other words, had there been an equal number of respondents in each group of subgroup or more than our present sample size i.e. 135 we would have obtained same mean. This is our null hypothesis H_0. Alternate hypothesis of comparing population mean across various subgroups is that there is significant difference between sample mean and that of the mean across various groups.

We have tested the significance level at 5% in both the cases. The findings would have been more appropriately discussed and analysed at various level of significance.

3.6 Data Presentation and Discussion

The data collected from 135 respondents is shown in the form of tables showing total mean and maximum Impact of Electronic Commerce on Business Value components with reference to weightage of all the sectors of service organisation and also with reference to Annual Group Turnover, % of IT spending and % of Electronic Commerce spending comparing it with the mean population.

The same table is presented in the form of pie graph in order to give clear view of comparison with the mean population showing the maximum Impact of Electronic Commerce on Business Value Components.

After graph in the subsequent section we have discussed the hypotheses, which has been tested statistically by applying F and Z test comparing it with the given values within the acceptable limits, and conclude that this difference is due to chance only.

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CHAPTER-Four

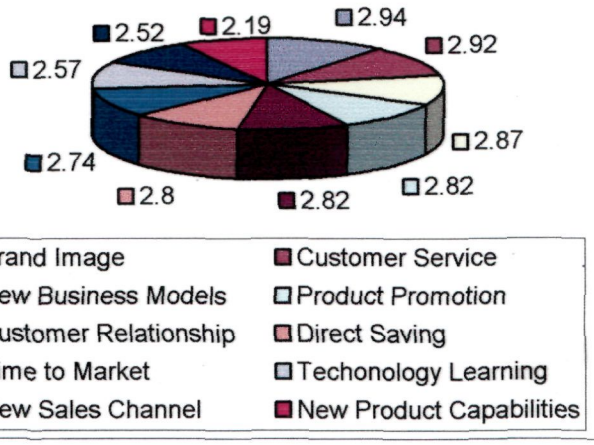
ANALYSIS, DISCUSSION, AND PRESENTATION

Table No- 4.1

Showing the Overall Impact of E-Commerce on Business Values

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

Graph No-4.1 Showing Overall Impact of EC on Business Values



As evident from Table No-4.1 Electronic Commerce has the maximum Impact on creating Brand Image where mean of 135 respondents is ***2.94*** *followed by 2.92 on Customer Service, 2.87 on New Business Models, 2.82 on Product Promotion, again 2.82 on Customer Relationship, 2.80 on Direct Savings, 2.74 on Time to Market, 2.57 on Technology Learning, 2.52 on New Sales Channel, the least is on New Product Capabilities which is 2.19.*

The overall total mean of 135 respondents of all the Business Values is ***2.72.***

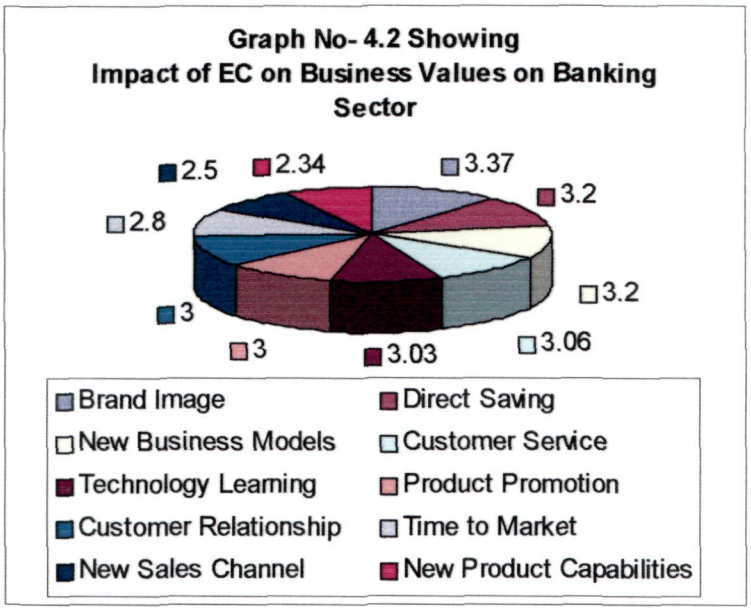
In the subsequent sections we have analysed and compared the Impact of Electronic Commerce across various types of organisation such as Banking, Finance, Insurance, Entertainment, Education, Consulting, Software, Electronic Commerce Solutions, Telecommunication and Others.

Table No- 4.2

Showing the Impact of E-Commerce on Business Values on Banking Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 7	
Brand Image	3.37
Direct Saving	3.20
New Business Models	3.20
Customer Service	3.06
Technology Learning	3.03
Product Promotion	3.00
Customer Relationship	3.00
Time to Market	2.80
New Sales Channel	2.50
New Product Capabilities	2.34
Total Mean	2.95



As we have seen in Table No-4.1 that on overall basis the Impact of Electronic Commerce on Brand Image is ranked as number- 1, same is the case with Banking Industry. Although the number of respondents are only 7 but the highest mean is for the Brand image which is ***3.37*** *and also the lowest is for the New Product Capabilities which is* ***3.24****.The difference between the mean population i.e. 2.94 and the mean of all Banking firms i.e. 3.37 has been statistically tested (please refer to list of tables on page number 280 for calculations). Comparing it with the given values it is much within the acceptable limits. Therefore we conclude that this difference is due to chance only otherwise there is strong Impact of Electronic Commerce on the Brand Image of Banking industry as well as other companies.*

Table No- 4.3

Showing the Impact of E-Commerce on Business Values on Finance Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 8	
Customer Relationship	3.20
Customer Service	3.18
Brand Image	3.00
Direct Saving	2.93
Technology Learning	2.90
New Business Models	2.90
Product Promotion	2.78
Time to Market	2.63
New Sales Channel	2.35
New Product Capabilities	2.30
Total Mean	2.82

Graph No- 4.3 Showing Impact of EC on Business Values on Finance Sector

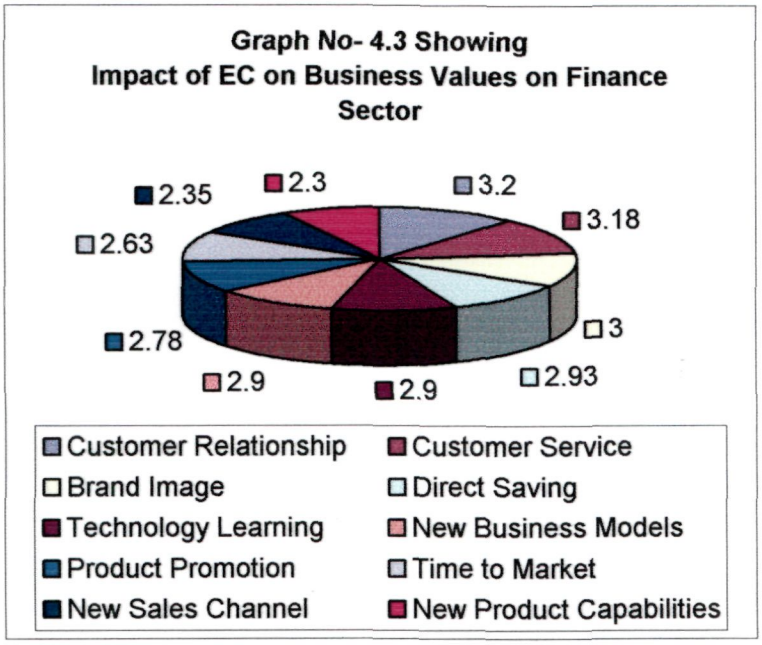


Table No- 4.3 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number- 1, but in case of Finance Industry Customer Relationship is ranked number-1 which is ***3.20*** *and also the lowest is for the New Product Capabilities which is* ***2.30*** *although the number of respondents are only 8. The difference between the mean population i.e. 2.94 and the mean of all Finance firms is 3.20 has been statistically tested (please refer to list of tables on page number 280 for calculations). Comparing it with the given values it is much within the acceptable limits.*

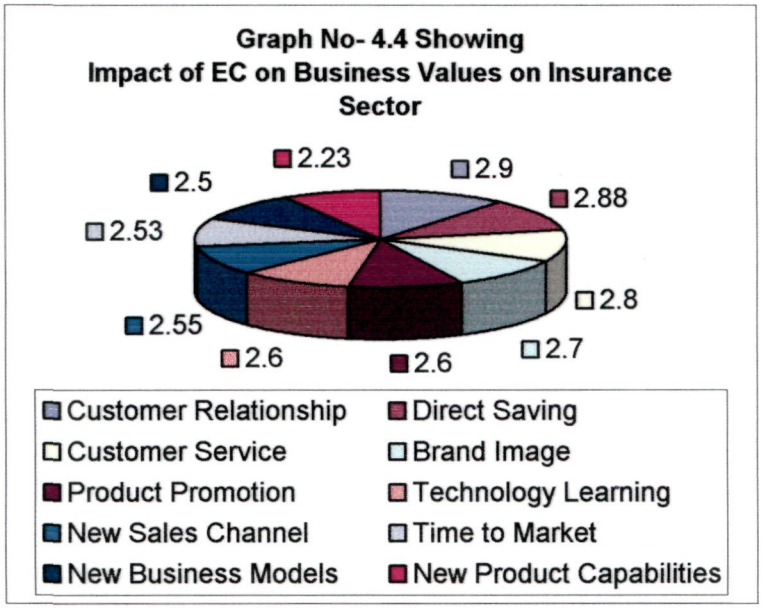
Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Relationship of Finance companies as well as other companies.

Table No- 4.4

Showing the Impact of E-Commerce on Business Values on Insurance Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 8	
Customer Relationship	2.90
Direct Saving	2.88
Customer Service	2.80
Brand Image	2.70
Product Promotion	2.60
Technology Learning	2.60
New Sales Channel	2.55
Time to Market	2.53
New Business Models	2.50
New Product Capabilities	2.23
Total Mean	2.63



As Table No- 4.4 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number- 1, but in case of Insurance Industry Customer Relationship is ranked number- 1 which is ***2.90*** *and also the lowest is for the New Product Capabilities which is* ***2.23*** *although the number of respondents are only 8. The difference between the mean population i.e. 2.94 and the mean of all Insurance firms is 2.90 has been statistically tested (please refer to list of tables on page number 280 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Relationship of Insurance companies.

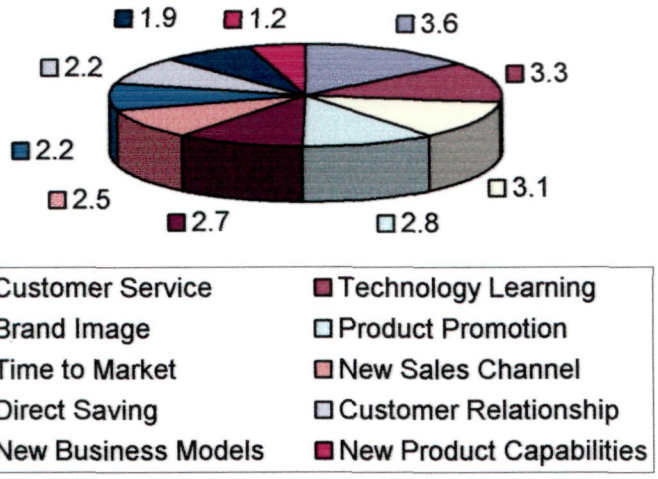
Table No- 4.5

Showing the Impact of E-Commerce on Business Values on Entertainment Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 2	
Customer Service	3.60
Technology Learning	3.30
Brand Image	3.10
Product Promotion	2.80
Time to Market	2.70
New Sales Channel	2.50
Direct Saving	2.20
Customer Relationship	2.20
New Business Models	1.90
New Product Capabilities	1.20
Total Mean	2.55

Graph No- 4.5 Showing Impact of EC on Business Values on Entertainment Sector



As shown in Table No- 4.5 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number- 1, but in case of Entertainment Industry Customer Service is ranked number-1 which is ***3.60*** *and also the lowest is for the New Product Capabilities which is* ***1.20*** *although the number of respondents are only 2. The difference between the mean population i.e. 2.94 and the mean of all Entertainment firms is 3.60 has been statistically tested (please refer to list of tables on page number 281 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service of Entertainment industry as well as other companies.a

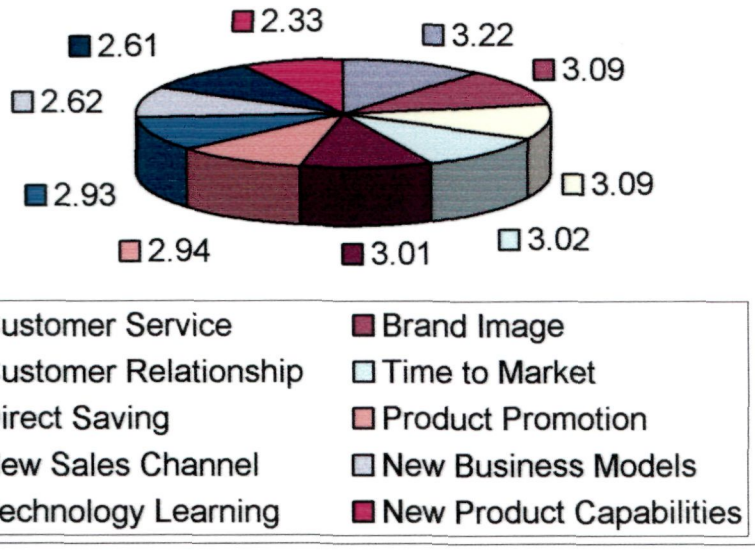
Table No-4.6

Showing the Impact of E-Commerce on Business Values on Consulting Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 17	
Customer Service	3.22
Brand Image	3.09
Customer Relationship	3.09
Time to Market	3.02
Direct Saving	3.01
Product Promotion	2.94
New Sales Channel	2.93
New Business Models	2.62
Technology Learning	2.61
New Product Capabilities	2.33
Total Mean	2.89

Graph No- 4.6 Showing
Impact of EC on Business Values on Consulting Sector



As we have seen in Table No- 4.6 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of Consulting Industry Customer Service is ranked number-1 which is ***3.22*** *and also the lowest is for the New Product Capabilities which is* ***2.33*** *although the number of respondents are only 17. The difference between the mean population i.e. 2.94 and the mean of all Consulting firms is 3.22 has been statistically tested (please refer to list of tables on page number 281 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service of Consulting Company as well as other companies.

Table No- 4.7

Showing the Impact of E-Commerce on Business Values on Education Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 10	
Direct Saving	2.82
Customer Relationship	2.68
Product Promotion	2.66
New Sales Channel	2.62
Time to Market	2.56
Customer Service	2.50
Brand Image	2.50
New Business Models	2.04
New Product Capabilities	1.90
Technology Learning	1.84
Total Mean	2.41

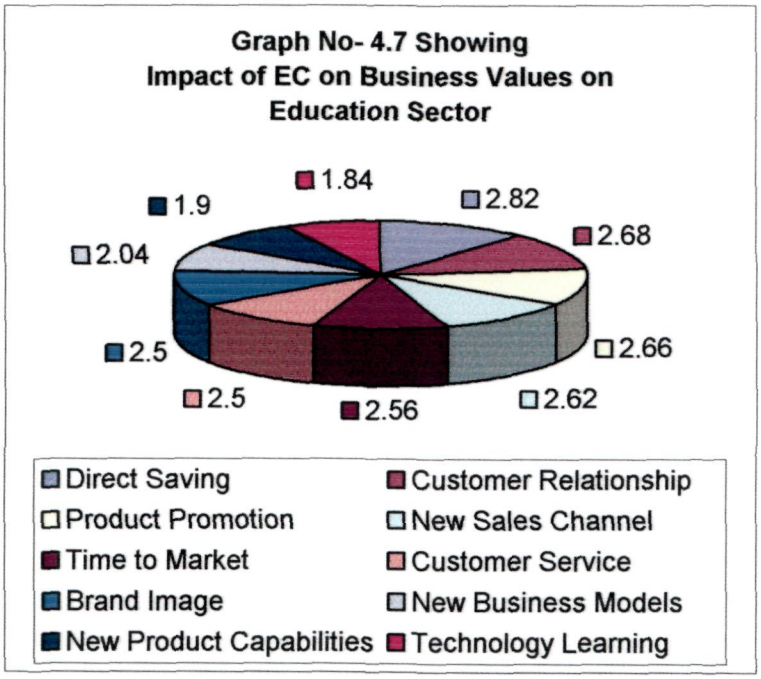


Table No- 4.7 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of Education Industry Direct Saving is ranked number-1 which is ***2.82*** *and also the lowest is for the Technology Learning which is* ***1.84*** *although the number of respondents are only 10. The difference between the mean population i.e. 2.94 and the mean of all Education firms is 2.82 has been statistically tested (please refer to list of tables on page number 281 for calculations). Comparing it with the given values it is much within the acceptable limits.*

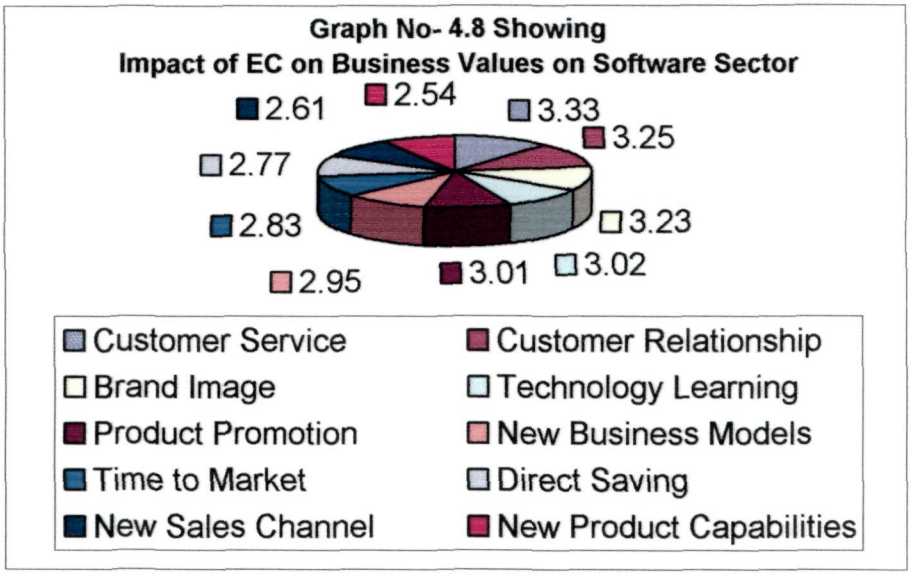
Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Direct Saving of Education Institutions.

Table No- 4.8

Showing the Impact of E-Commerce on Business Values on Software Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 21	
Customer Service	3.33
Customer Relationship	3.25
Brand Image	3.23
Technology Learning	3.02
Product Promotion	3.01
New Business Models	2.95
Time to Market	2.83
Direct Saving	2.77
New Sales Channel	2.61
New Product Capabilities	2.54
Total Mean	2.95



As shown Table No- 4.8 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of Software Industry Customer Service is ranked number-1 which is ***3.33*** *and also the lowest is for the New Product Capabilities which is* ***2.54*** *although the number of respondents are only 21. The difference between the mean population i.e. 2.94 and the mean of all Software firms is 3.33 has been statistically tested (please refer to list of tables on page number 282 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service of Software Company as well as other companies.

Table No-4.9
Showing the Impact of E-Commerce on Business Values on Telecommunication Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 9	
Customer Service	2.91
Brand Image	2.69
Product Promotion	2.62
Time to Market	2.51
Technology Learning	2.47
Direct Saving	2.42
New Product Capabilities	2.33
Customer Relationship	2.29
New Sales Channel	2.16
New Business Models	2.06
Total Mean	2.45

Graph No- 4.9 Showing
Impact of EC on Businesss Values on Telecommuniaction Sector

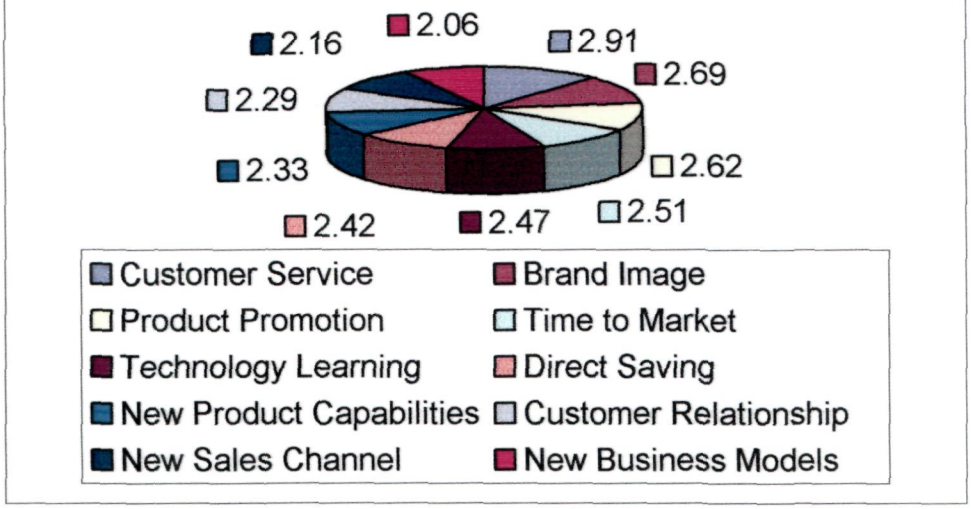


Table No- 4.9 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of Telecommunication Industry Customer Service is ranked number-1 which is ***2.91*** *and also the lowest is for the New Business Models which is* ***2.06*** *although the number of respondents are only 9. The difference between the mean population i.e. 2.94 and the mean of all Telecommunication firms is 2.91 has been statistically tested (please refer to list of tables on page number 282 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service of Telecommunication Company as well as other companies.

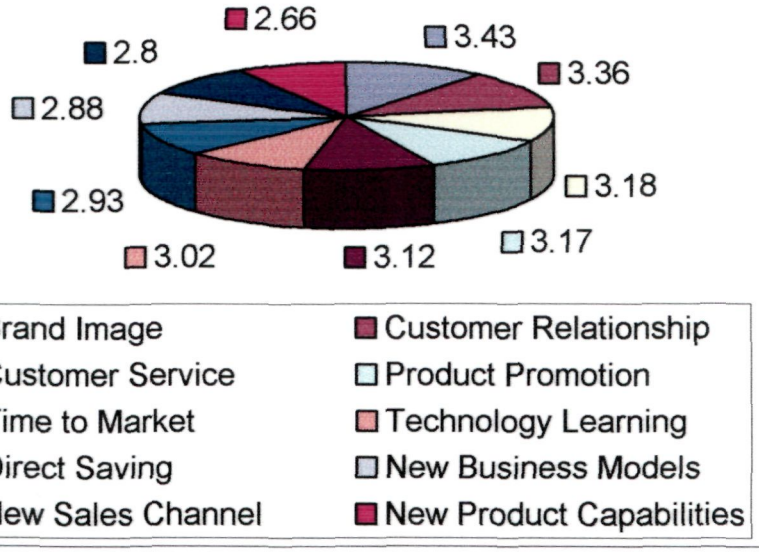
Table No- 4.10

Showing the Impact of E-Commerce on Business Values on E-Commerce Solution Sector

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 18	
Brand Image	3.43
Customer Relationship	3.36
Customer Service	3.18
Product Promotion	3.17
Time to Market	3.12
Technology Learning	3.02
Direct Saving	2.93
New Business Models	2.88
New Sales Channel	2.80
New Product Capabilities	2.66
Total Mean	3.05

Graph No- 4.10 Showing
Impact of EC on Business Values on EC Solution Sector



As shown in Table number- 4.10 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, same is the case of Electronic Commerce Solution Industry where Brand Image is ranked number-1 which is ***3.43*** *and also the lowest is for the New Product Capabilities which is* ***2.66*** *although the number of respondents are only 18. The difference between the mean population i.e. 2.94 and the mean of all Electronic Commerce Solution firms is 3.43 has been statistically tested (please refer to list of tables on page number 282 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Brand Image of Electronic Commerce Solution company as well as other companies.

Table No- 4.11
Showing the Impact of E-Commerce on Business Values on Other Sectors

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.71

No of Respondents 35	
Direct Saving	2.64
Customer Service	2.64
Product Promotion	2.57
Brand Image	2.57
Time to Market	2.53
New Sales Channel	2.21
Customer Relationship	2.21
Technology Learning	2.05
New Business Models	1.80
New Product Capabilities	1.69
Total Mean	2.29

Graph No- 4.11 Showing
Impact of EC on Business Values on other Sectors

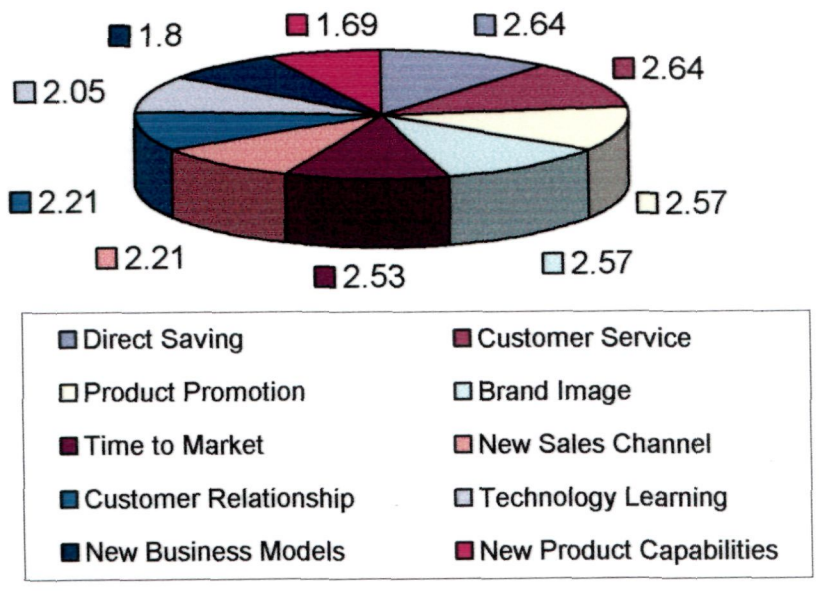


Table No-4.11 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of Other Industries Direct Saving is ranked number-1 which is ***2.64*** *and also the lowest is for the New Product Capabilities which is* ***1.69*** *although the number of respondents are only 350. The difference between the mean population i.e. 2.94 and the mean of all Other firms is 2.64 has been statistically tested (please refer to list of tables on page number 283 for calculations). Comparing it with the given values it is much within the acceptable limits.*

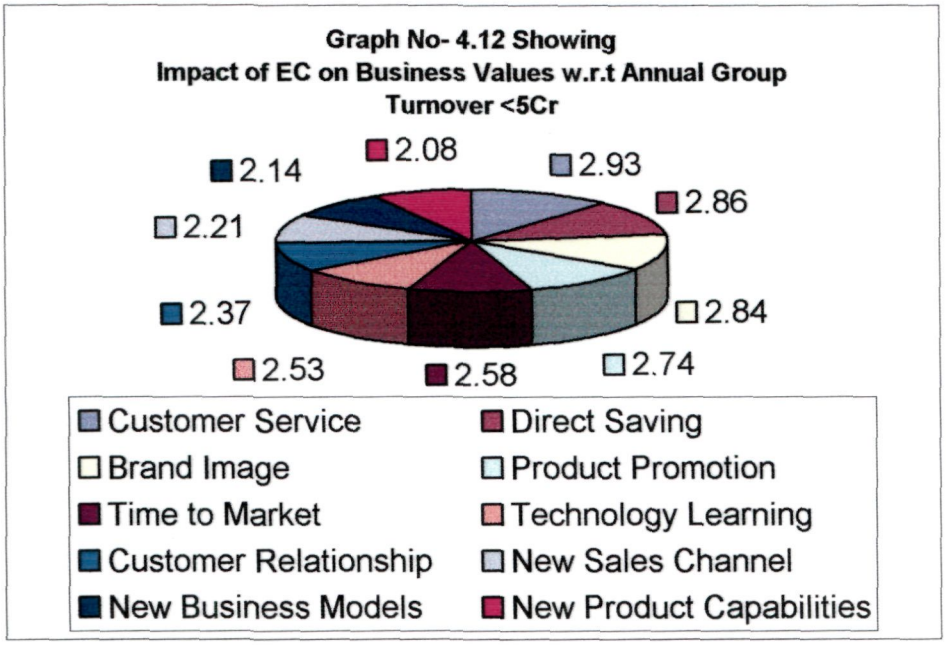
Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Direct Saving of other companies.

Table No- 4.12

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual Group Turnover <5Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 38	
Customer Service	2.93
Direct Saving	2.86
Brand Image	2.84
Product Promotion	2.74
Time to Market	2.58
Technology Learning	2.53
Customer Relationship	2.37
New Sales Channel	2.21
New Business Models	2.14
New Product Capabilities	2.08
Total Mean	2.53



As shown in Table No- 4.12 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to annual group turnover <5Cr Customer Service is ranked number-1 which is ***2.93*** *and also the lowest is for the New Product Capabilities which is* ***2.08*** *although the number of respondents are only 380. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual group turnover <5Cr is 2.93 has been statistically tested (please refer to list of tables on page number 283 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service with reference to annual group turnover <5Cr.

Table No- 4.13

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual Group Turnover 50Cr-500Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 33	
Customer Relationship	3.10
Customer Service	2.95
Brand Image	2.79
New Sales Channel	2.78
Direct Saving	2.77
New Business Models	2.72
Time to Market	2.65
Product Promotion	2.48
Technology Learning	2.21
New Product Capabilities	1.65
Total Mean	2.61

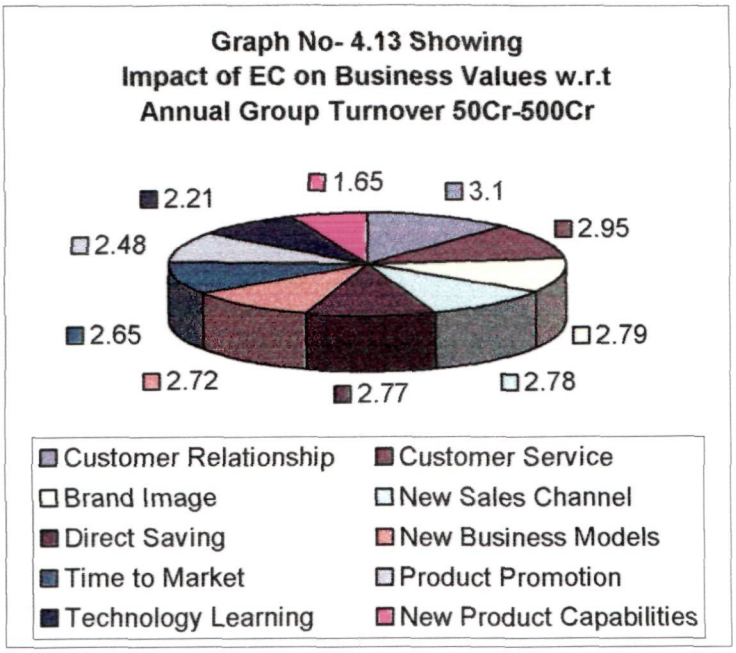


Table No- 4.13 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to annual group turnover 50Cr-500Cr Customer Relationship was ranked number -1 which is ***3.10*** *and also the lowest is for the New Product Capabilities which is* ***1.65*** *although the number of respondents are only 33. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual group turnover 50Cr-500Cr is 3.1 has been statistically tested (please refer to list of tables on page number 283 for calculations). Comparing it with the given values it is much within the acceptable limits. Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service with reference to annual group turnover 50Cr-500Cr.*

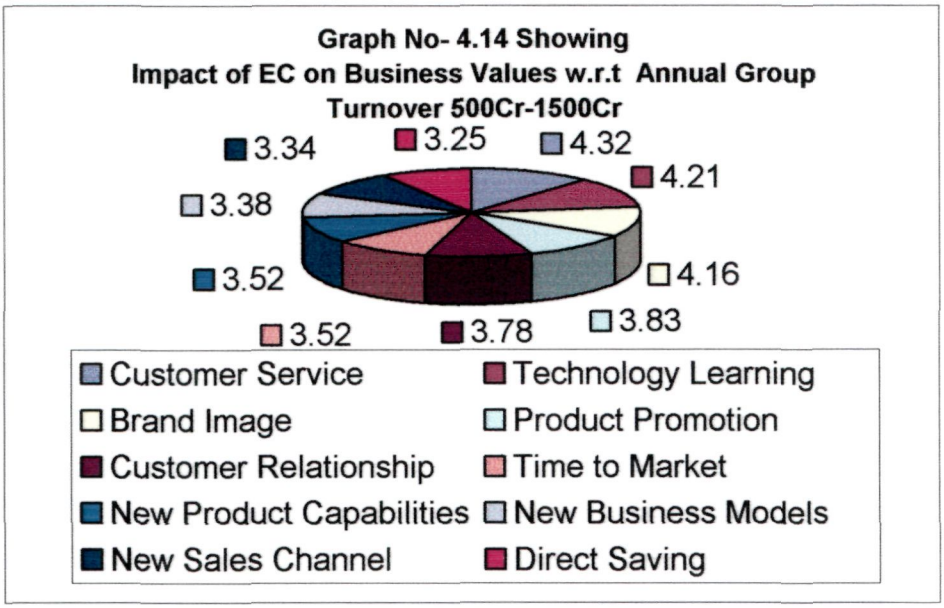
Table No- 4.14

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual Group Turnover 500Cr-1500Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.8
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 10	
Customer Service	4.32
Technology Learning	4.21
Brand Image	4.16
Product Promotion	3.83
Customer Relationship	3.78
Time to Market	3.52
New Product Capabilities	3.52
New Business Models	3.38
New Sales Channel	3.34
Direct Saving	3.25
Total Mean	3.73

Graph No- 4.14 Showing Impact of EC on Business Values w.r.t Annual Group Turnover 500Cr-1500Cr



As we have seen in Table No- 4.14 that the overall basis the Impact of Electronic Commerce on Brand Image was ranked as number- 1, but in case of industries with reference to annual group turnover 500Cr-1500Cr Customer Service is ranked number-1 which is ***4.32*** *and also the lowest is for the Direct Saving which is* ***3.25*** *although the number of respondents are only 10. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual group turnover 500Cr-1500Cr is 4.32 has been statistically tested (please refer to list of tables on page number 284 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service with reference to annual group turnover 500Cr-1500Cr.

Table No- 4.15

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual Group Turnover 1500Cr-5500Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 5	
New Sales Channel	3.88
Brand Image	3.72
Direct Saving	3.60
Product Promotion	3.52
Time to Market	3.48
Customer Service	3.28
Technology Learning	3.24
New Business Models	3.20
Customer Relationship	3.04
New Product Capabilities	2.52
Total Mean	3.35

Graph No- 4.15 Showing Impact of EC on Business Values w.r.t Annual Group Turnover 1500Cr-5500Cr

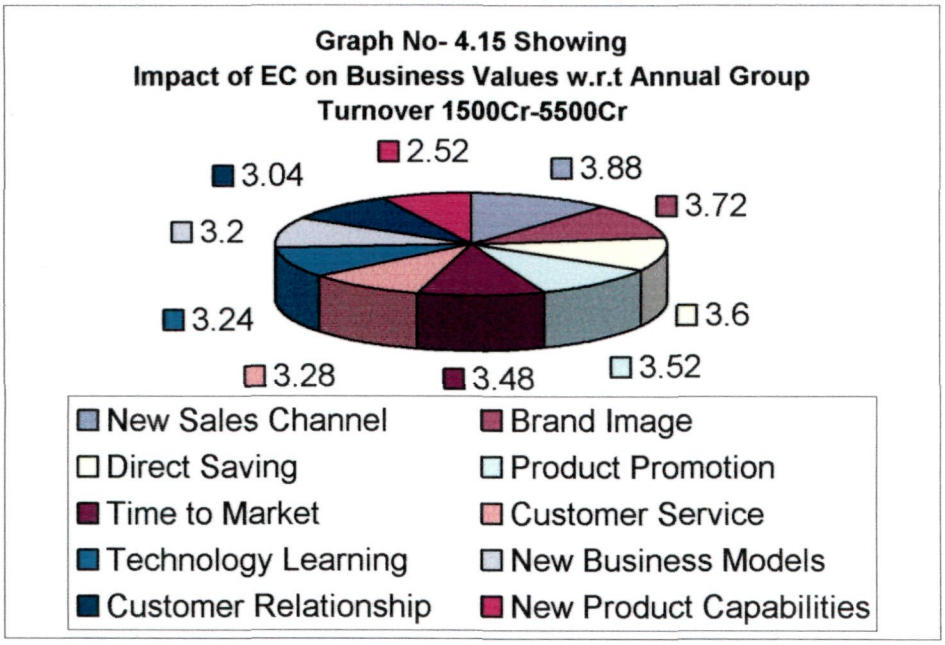


Table No- 4.15 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to annual group turnover 1500Cr-5500Cr New Sales Channel is ranked number-1 which is ***3.88*** *and also the lowest is for the New Product Capabilities which is* ***2.52*** *although the number of respondents are only 5. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual group turnover 1500Cr-5500Cr is 3.88 has been statistically tested (please refer to list of tables on page number 284 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the New Sales Channel with reference to annual group turnover 1500Cr-5500Cr.

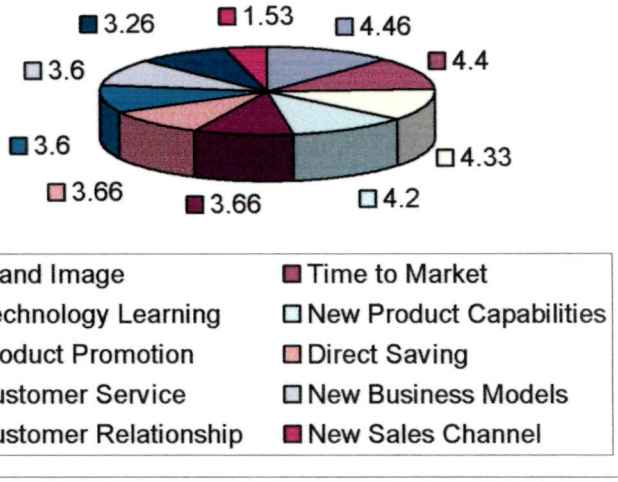
Table No- 4.16

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual Group Turnover 5500Cr-10000Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 3	
Brand Image	4.46
Time to Market	4.40
Technology Learning	4.33
New Product Capabilities	4.20
Product Promotion	3.66
Direct Saving	3.66
Customer Service	3.60
New Business Models	3.60
Customer Relationship	3.26
New Sales Channel	1.53
Total Mean	3.67

Graph No- 4.16 Showing Impact of EC on Business Values w.r.t Annual Group Turnover 5500Cr-10000Cr



As shown in Table No- 4.16 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, same in case of industries with reference to annual group turnover 5500Cr-10000Cr Brand Image is ranked number-1 which is ***4.66*** *and also the lowest is for the New Sales Channel which is* ***1.93*** *although the number of respondents are only 3. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual group turnover 5500Cr-10000Cr is 4.66 has been statistically tested (please refer to list of tables on page number 284 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Brand Image with reference to annual group turnover 5500Cr-10000Cr.

Table No- 4.17

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual Group Turnover 10000Cr-450000Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 5	
Direct Saving	3.28
Technology Learning	3.00
Brand Image	2.96
Customer Service	2.68
Product Promotion	2.64
Time to Market	2.44
New Business Models	2.40
New Product Capabilities	2.08
Customer Relationship	1.96
New Sales Channel	1.56
Total Mean	2.50

Graph No- 4.17 Showing
Impact of EC on Business Values w.r.t Annual Group Turnover 10000Cr-450000

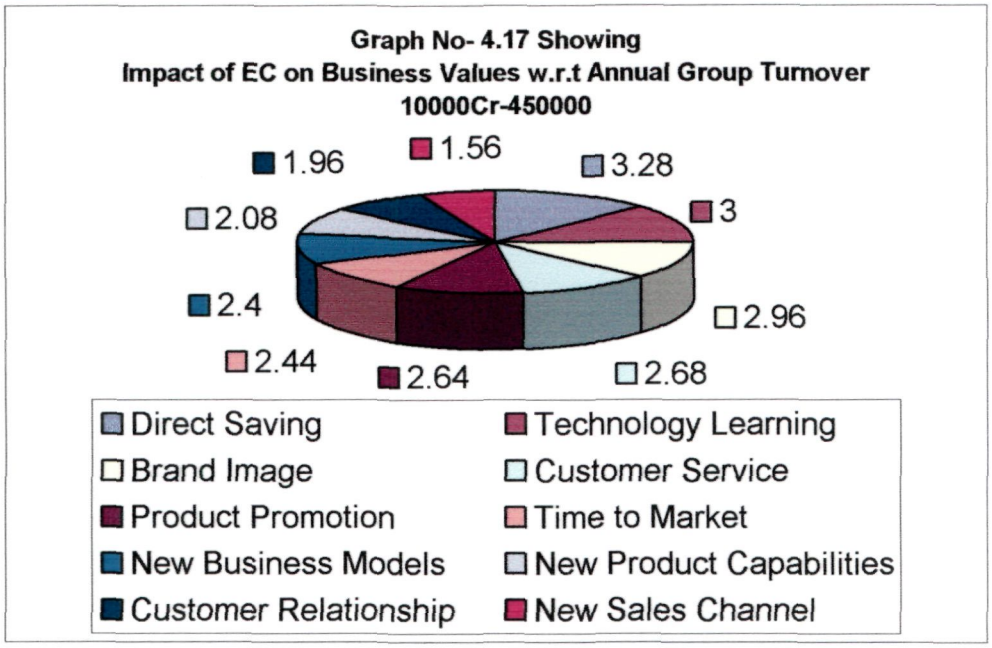


Table No- 4.17 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to annual group turnover 10000Cr-450000Cr Direct Saving is ranked number-1 which is ***3.28*** *and also the lowest is for the New Sales Channel which is 1.56 although the number of respondents are only 5. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual group turnover 10000Cr-450000Cr is 3.28 has been statistically tested (please refer to list of tables on page number 285 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Direct Saving with reference to annual group turnover 10000Cr-450000Cr.

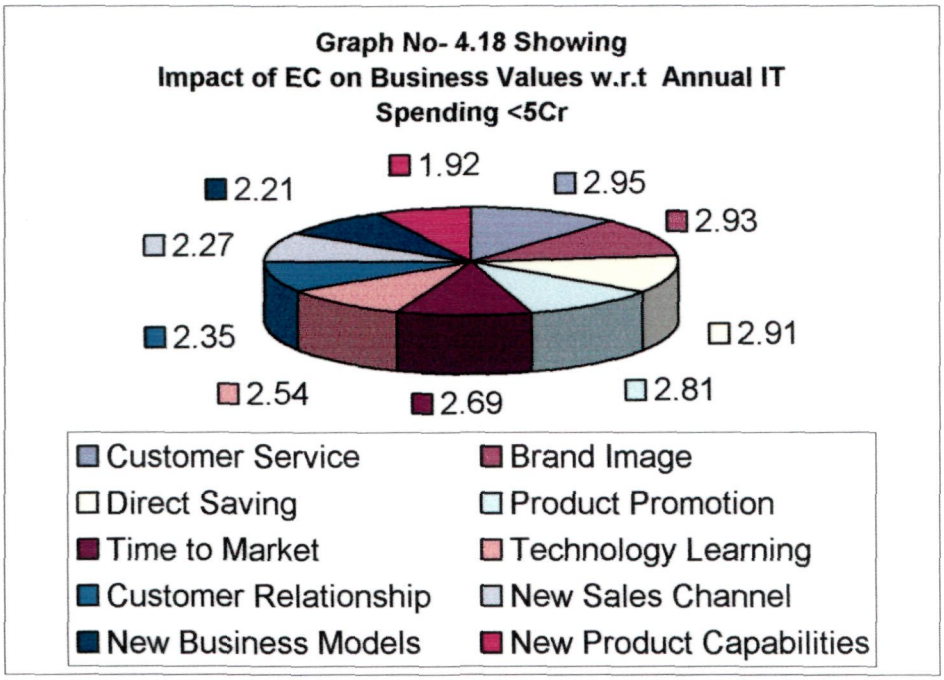
Table No- 4.18

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual IT Spending <5Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 40	
Customer Service	2.95
Brand Image	2.93
Direct Saving	2.91
Product Promotion	2.81
Time to Market	2.69
Technology Learning	2.54
Customer Relationship	2.35
New Sales Channel	2.27
New Business Models	2.21
New Product Capabilities	1.92
Total Mean	2.56

Graph No- 4.18 Showing Impact of EC on Business Values w.r.t Annual IT Spending <5Cr



As we have seen in Table No- 4.18 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to annual IT spending <5Cr Customer Service is ranked number-1 which is ***2.95*** *and also the lowest is for the New Product Capabilities which is* ***1.92*** *although the number of respondents are only 40. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual IT spending <5Cr is 2.95 has been statistically tested (please refer to list of tables on page number 285 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Service with reference to annual IT spending <5Cr.

Table No- 4.19

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual IT Spending 10Cr-200Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 10	
Customer Relationship	3.58
Customer Service	3.24
Product Promotion	3.14
Direct Saving	2.98
Technology Learning	2.96
Time to Market	2.94
New Sales Channel	2.92
New Business Models	2.86
Brand Image	2.76
New Product Capabilities	2.26
Total Mean	2.96

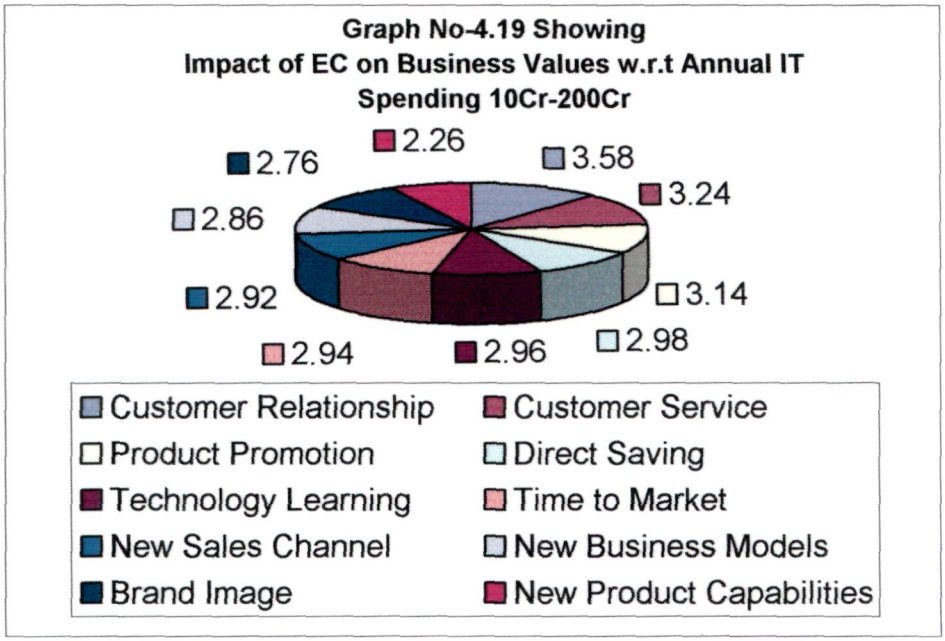


Table No- 4.19 shows that the overall basis the Impact of Electronic Commerce on Brand Image was ranked as number-1, but in case of industries with reference to annual IT spending 10Cr-200Cr Customer Relationship is ranked number-1 which is ***3.58*** *and also the lowest is for the New Product Capabilities which is* ***2.26*** *although the number of respondents are only 10. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual IT spending 10Cr-200Cr is 3.58 has been statistically tested (please refer to list of tables on page number 285 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Relationship with reference to annual IT spending 10Cr-200Cr.

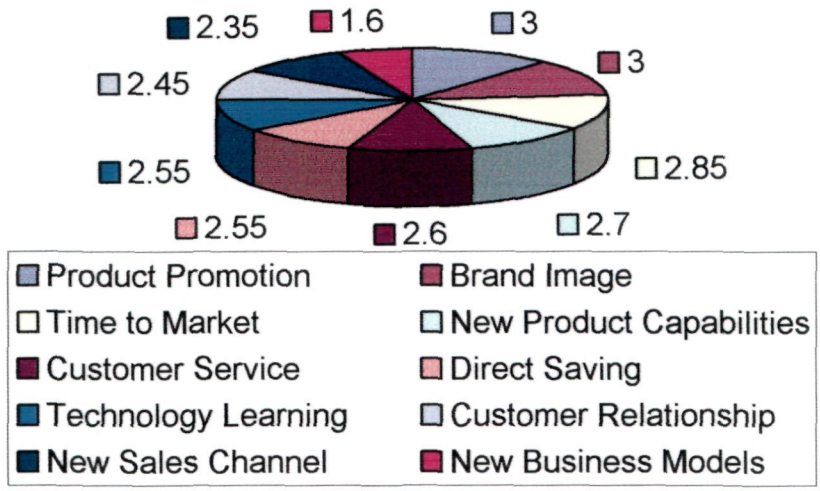
Table No- 4.20

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) Annual IT Spending 250Cr-400Cr

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 4	
Product Promotion	3.00
Brand Image	3.00
Time to Market	2.85
New Product Capabilities	2.70
Customer Service	2.60
Direct Saving	2.55
Technology Learning	2.55
Customer Relationship	2.45
New Sales Channel	2.35
New Business Models	1.60
Total Mean	2.56

Graph No- 4.20 Showing Impact of EC on Business Values w.r.t Annual IT Spending 250Cr-4000Cr



As shown in Table No- 4.20 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to annual IT spending 250Cr-400Cr Product Promotion is ranked number-1 which is ***3.00*** *and also the lowest is for the New Business Models which is* ***1.60*** *although the number of respondents are only 4. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to annual IT spending 250Cr-400Cr is 3.00 has been statistically tested (please refer to list of tables on page number 286 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Product Promotion with reference to annual IT spending 250Cr-400Cr.

Table No- 4.21

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) % of Electronic Commerce Spending <20%

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 40	
Brand Image	2.96
Customer Service	2.86
Direct Saving	2.76
Customer Relationship	2.58
Product Promotion	2.57
New Sales Channel	2.48
New Business Models	2.48
Time to Market	2.45
Technology Learning	2.45
New Product capabilities	1.81
Total Mean	2.54

Graph No- 4.21 Showing
Impact of EC on Business Values w.r.t %of EC Spending <20%

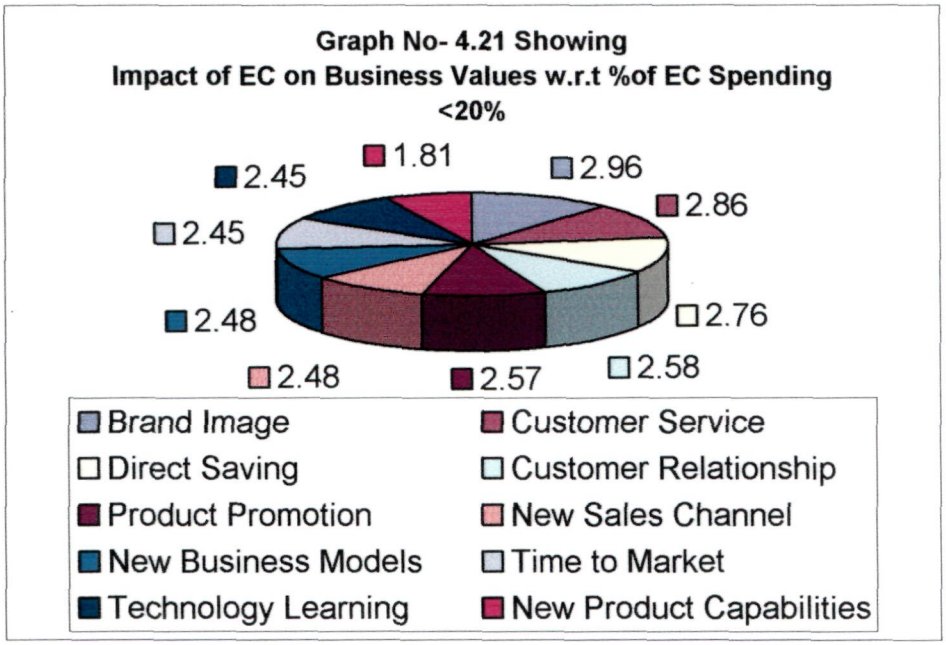


Table No- 4.21 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, same in case of industries with reference to % of Electronic Commerce spending <20 % Brand Image is ranked number-1 which is ***2.96*** *and also the lowest is for the New Product Capabilities which is* ***1.81*** *although the number of respondents are only 40. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to % of Electronic Commerce spending <20 % is 2.96 has been statistically tested (please refer to list of tables on page number 286 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Brand Image with reference to % of Electronic Commerce spending <20 %

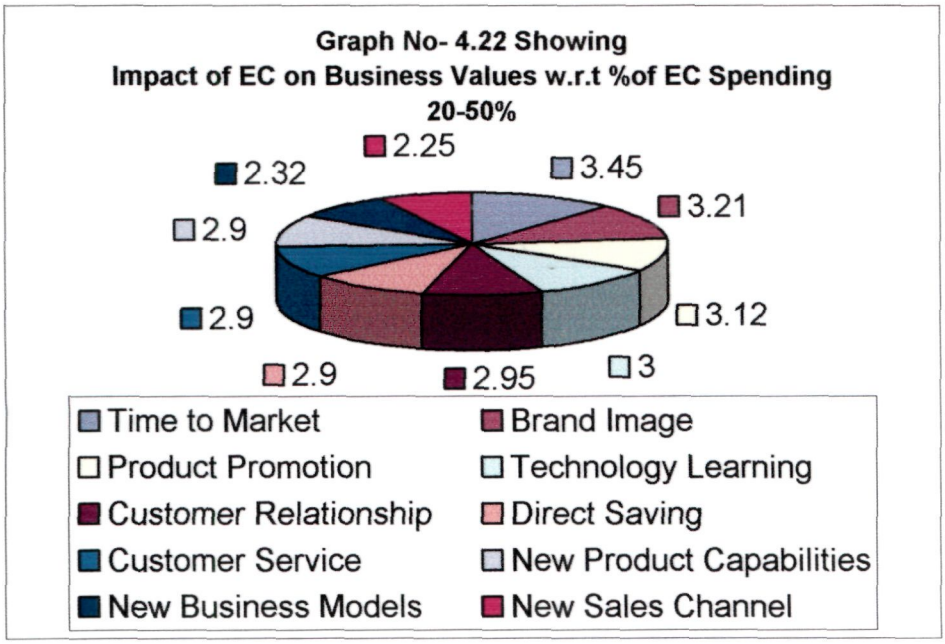
Table No- 4.22

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) % of Electronic Commerce Spending 20%-50%

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 8	
Time to Market	3.45
Brand Image	3.21
Product Promotion	3.12
Technology Learning	3.00
Customer Relationship	2.95
Direct Saving	2.90
Customer Service	2.90
New Product Capabilities	2.90
New Business Models	2.32
New Sales Channel	2.25
Total Mean	2.90

Graph No- 4.22 Showing
Impact of EC on Business Values w.r.t %of EC Spending 20-50%



As shown in Table No- 4.22 that the overall basis the Impact of Electronic Commerce on Brand Image is ranked as number-1, but in case of industries with reference to % of Electronic Commerce spending 20%-50% Time to Market is ranked number-1 which is ***3.45*** *and also the lowest is for the New Sales Channel which is* ***2.25*** *although the number of respondents are only 8. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to % of Electronic Commerce spending 20%-50% is 3.45 has been statistically tested (please refer to list of tables on page number 286 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Time to Market with reference to % of Electronic Commerce spending between 20%-50%.

Table No- 4.23

Showing the Impact of E-Commerce on Business Values with Reference to (w.r.t) % of Electronic Commerce Spending 50%-100%

No of Respondents 135	
Brand Image	2.94
Customer Service	2.92
New Business Models	2.87
Product Promotion	2.82
Customer Relationship	2.82
Direct Saving	2.80
Time to Market	2.74
Technology Learning	2.57
New Sales Channel	2.52
New Product Capabilities	2.19
Total Mean	2.72

No of Respondents 14	
Customer Relationship	4.05
Customer Service	3.80
Product Promotion	3.64
Time to Market	3.50
Technology Learning	3.48
New Sales Channel	3.45
Brand Image	3.35
New Product Capabilities	3.07
Direct Saving	3.05
New Business Models	2.81
Total Mean	3.42

Graph No- 4.23 Showing Impact of EC on Business Values w.r.t %of EC Spending 50-100%

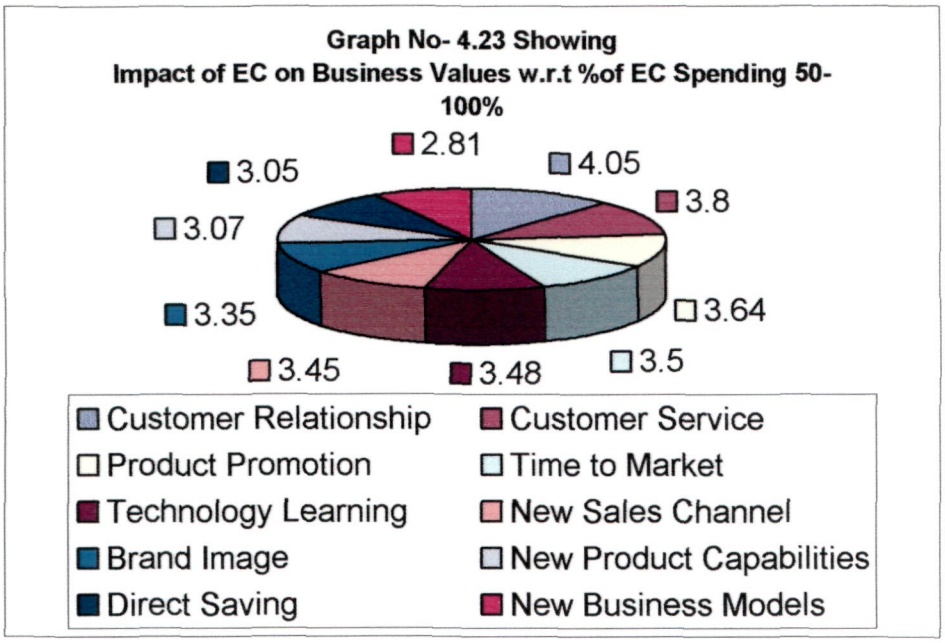


Table No- 4.23 shows that the overall basis the Impact of Electronic Commerce on Brand Image is ranked number- 1, but in case of industries with reference to % of Electronic Commerce spending 50%-100% Customer Relationship is ranked number-1 which is ***4.05*** *and also the lowest is for the New Business Models which is* ***2.81*** *although the number of respondents are only 14. The difference between the mean population i.e. 2.94 and the mean of all firms with reference to % of Electronic Commerce spending 50%-100% is 4.05 has been statistically tested (please refer to list of tables on page number 287 for calculations). Comparing it with the given values it is much within the acceptable limits.*

Therefore we conclude that this difference is due to chance only otherwise there is a strong Impact of Electronic Commerce on the Customer Relationship with reference to % of Electronic Commerce spending 50%-100%.

Table No-2.24: Master Chart Showing the Weightage of The Impact of Electronic Commerce on Business Values on all the Sectors of Service Organisations

	ALL	Bank	Fin	Insur	Enter	Cons	Edu	Software	Tele	E-Com Solution	Others
No Of Respondents	135	7	8	8	2	17	10	21	9	18	35
Product promotion	2.82	3	2.78	2.6	2.8	2.94	2.66	3.01	2.62	3.17	2.57
New Sales Channel	2.52	2.5	2.35	2.55	2.5	2.93	2.62	2.61	2.16	2.8	2.21
Direct Saving	2.8	3.2	2.93	2.88	2.2	3.01	2.82	2.77	2.42	2.93	2.64
Time to Market	2.74	2.8	2.63	2.53	2.7	3.02	2.56	2.83	2.51	3.12	2.53
Customer Service	2.92	3.06	3.18	2.8	3.6	3.22	2.5	3.33	2.91	3.18	2.64
Brand Image	2.94	3.37	3	2.7	3.1	3.09	2.5	3.23	2.69	3.43	2.57
Technology Learning	2.57	3.03	2.9	2.6	3.3	2.61	1.84	3.02	2.47	3.02	2.05
Customer Relationship	2.82	3	3.2	2.9	2.2	3.09	2.68	3.25	2.29	3.36	2.21
New Product Capabilities	2.19	2.34	2.3	2.23	1.2	2.33	1.9	2.54	2.33	2.66	1.69
New Business Models	2.87	3.2	2.9	2.5	1.9	2.62	1.9	2.95	2.06	2.88	1.8
Total Mean	2.71	2.95	2.81	2.62	2.41	2.88	2.41	2.95	2.44	3.05	2.29
Variance	0.05	0.01	0.09	0.04	0.5	0.07	0.12	0.07	0.06	0.05	0.12
F and Z Tests		F=0.52	F=0.55	F=1.32	F=0.1	F=0.69	F=0.43	F=0.73	F=0.83	F=0.89	Z=0.58

Table No-4.25: Master Chart Showing the Weightage of The Impact of Electronic- Commerce on Business Values on all the Sectors of Service Organisations (w.r.t) Annual Group Turn Over, % IT Spending, % Electronic Commerce Spending

		Annual Turnover						Annual IT Spending			% E-Commerce Spending		
	ALL	<5 Cr	50-500Cr	500-1500Cr	1500-5500Cr	5500-10000Cr	10000-450000Cr	<5Cr	10-200Cr	250-4000Cr	<20	20-50	50-100
No of Respondents	135	38	33	10	5	3	5	40	10	4	40	8	14
Product promotion	2.82	2.74	2.48	3.83	3.52	3.66	2.64	2.81	3.14	3	2.57	3.12	3.64
New Sales Channel	2.52	2.21	2.78	3.34	3.88	1.53	1.56	2.27	2.92	2.35	2.48	2.25	3.45
Direct Saving	2.8	2.86	2.77	3.25	3.6	3.66	3.28	2.91	2.98	2.55	2.7778	2.9	3.05
Time to Market	2.74	2.58	2.65	3.52	3.48	4.4	2.44	2.69	2.94	2.85	2.45	3.45	3.5
Customer Service	2.92	2.93	2.95	4.32	3.28	3.6	2.68	2.95	3.24	2.6	2.86	2.9	3.8
Brand Image	2.94	2.84	2.79	4.16	3.72	4.46	2.96	2.93	2.76	3	2.96	3.21	3.35
Customer Relationship	2.82	2.37	3.1	3.78	3.04	3.26	1.96	2.35	3.58	2.45	2.58	2.95	4.05
Technology Learning	2.57	2.53	2.21	4.21	3.24	4.33	3	2.54	2.96	2.55	2.45	3	3.48
New Product Capabilities	2.19	2.08	1.65	3.52	2.52	4.2	2.08	1.92	2.26	2.7	1.81	2.9	3.07
New Business Models	2.87	2.14	2.72	3.38	3.2	3.6	2.4	2.21	2.86	1.6	2.48	2.32	2.81
Total Mean	2.71	2.52	2.61	3.73	3.34	3.67	2.5	2.55	2.96	2.56	2.54	2.9	3.42
Variance	0.05	0.09	0.17	0.15	0.15	0.73	0.27	0.12	0.11	0.16	0.09	0.13	0.13
F and Z Tests		Z=0.24	Z=0.14	F=0.35	F=0.35	F=0.07	F=0.19	Z=0.21	F=0.46	F=0.32	Z=0.23	F=0.39	F=0.38

CHAPTER-Five

SUGGESTIONS AND RECOMMENDATIONS

5.1 Suggestions and Recommendations in General

On the basis of the analysis and interpretation of the findings following suggestions and recommendations are made:

1) ***Brand Image***- The overall maximum Impact of Electronic Commerce is on Brand Image, which is **2.94**. Comparing with different service organisations **Banking and Electronic Commerce Solution** industry has maximum Impact on Brand Image. Analysis also shows that companies with **Annual Group Turnover between 5500-10000Cr** and where **percentage of Electronic Commerce spending <20%** has maximum Impact on Brand Image. Thus the banking industry appears to have taken full advantage of the opportunities offered by Electronic Commerce in building its image. It may be followed by other organisations as well.
2) ***Customer Service***- Analysis shows that after Brand Image, Customer Service has the maximum overall Impact, which is **2.92**. Again comparing with other organisations **Entertainment, Consulting, Software, Telecommunication** and companies with **Annual Group Turnover <5Cr, between 500-1500Cr,** with **Annual IT Spending <5cr** has got the maximum Impact on Customer Service which shows that these companies have taken full benefit of the opportunities offered by Electronic Commerce specially on Customer Service in improving their customer services and may be followed by other organisations as well.
3) ***New Business Models***- New Business Models has maximum Impact, which is **2.87** followed by Customer Service. Comparing with different service organisations, Annual Group Turnover, % of Annual IT Spending and %of Electronic Commerce Spending does not show any Impact on any of the Component of Business Values. Thus no service organisations have taken full advantage of the opportunities offered by Electronic Commerce Business Models to improve Business Value Components.
4) ***Product Promotion***- Findings shows that overall Product Promotion, which is **2.82**, has maximum Impact after New Business Models. Analysis on the basis of service organistaions, Annual Turnover, Annual IT Spending and Annual % of Electronic Commerce Spending shows companies with **Annual IT Spending**

between 250-4000Cr has the maximum Impact on Product Promotion, therefore Electronic Commerce have given maximum opportunities to Product Promotion on companies with Annual IT Spending 250-4000Cr which can be followed by others as well.

5) ***Customer Relationship***- Overall Customer Relationship has the same Impact followed by Product Promotion, which is **2.82**. Comparing with other organisations Customer Relationship has maximum Impact on **Finance and Insurance** companies. Again companies with **Annual Group Turnover 50-500Cr, Annual IT Spending <5cr** and **% of Electronic Commerce Spending between 50-100%** shows maximum Impact on Customer Relationship. Thus Finance and Insurance companies have taken full advantage offered by Electronic Commerce in building Customer Relationship. It may be followed by other organisation as well.

6) ***Direct Saving***- On the basis of analysis Direct Saving has maximum Impact after Customer Relationship, which is **2.80**. Analysis on the basis of service organisations with **Annual Turnover between 10000-450000Cr, Education and Others** companies shows maximum Impact on Direct Saving therefore these companies have taken maximum benefit on Direct Saving by applying Electronic Commerce in their organisations.

7) ***Time to Market***- Overall maximum Impact of Electronic Commerce after Direct Saving is on Time to Market, which is **2.74.** Only companies using Electronic Commerce where **% of Electronic Commerce Spending is 20-50%** has the maximum Impact on Time to Market comparing with different service organisations, Annual Group Turnover, Annual IT Spending. This shows opportunities offered by Electronic Commerce have given full advantage to companies to their customers on Time to Market in building image, which may be followed by organisations as well.

8) ***Technology and Laboratory Learning***- Technology Learning which is **2.57** has the maximum Impact after Time to Market. Analysis shows that it does not have any Impact on any of the Business Value Components in any of the organisations,

which shows that there is no opportunity offered by Electronic Commerce in building image on Business Value Components in any service organisations.

9) ***New Sales Channel-*** Maximum overall Impact after Technology Learning is on New Sales Channel, which is **2.52**. Comparing with different organisations only companies with **Annual Turnover between 1500-5500Cr** shows maximum Impact on New Sales Channel. Thus companies with Annual Turnover 1500-5500Cr appear to have taken full advantage offered by Electronic Commerce and may be followed by other service organisations as well.

10) ***New Product Capabilities-*** New Product Capabilities, which is 5.19, followed by New Sales Channel shows maximum Impact. Findings of the analysis shows that this Component of Business Values does not show any Impact comparing with different service organisations, therefore opportunities offered by Electronic Commerce in building image on Business Value Components have not taken any advantage on any of the service organisations.

5.2 Organisation Based Suggestions

On the basis of findings of the present study comprehensively establishes that the maximum opportunities offered by Electronic Commerce does not have the same advantages on building Business Values comparing it with different service organisations:

1) ***Banking***- Overall analysis shows that Banking industry has the maximum Impact on **Brand Image which is 3.37** and minimum on New Product Capabilities 2.34 followed by Direct Saving 3.20, New Business Models again 3.20, Technology Learning 3.03, Customer service 3.06, Product Promotion 3.0, Customer Relationship 3.0, Time to Market 2.80, New Sales Channel 2.50. Comparing with Electronic-Commerce solution industry where maximum Impact is on Brand Image, which is greater than Banking industry i.e. 3.43. This shows that Banking industry have taken less advantage in building its image comparing with Electronic Commerce Solution industry therefore studies may be conducted on the opportunities offered by Electronic Commerce on maximum and minimum Business Values within as well as with other organisations.
2) ***Electronic-Commerce Solution Industry***- As evident from analysis Electronic Commerce Solution industry has maximum Impact on **Brand Image** comparing with Banking and other organisations which is **3.43** followed by Customer Relationship 3.36, Customer Service 3.18, Product Promotion 3.17, Time to Market 3.12, Technology Learning 3.02, Direct saving 2.93, New Business Models 2.88, New Sales Channel 2.80, New Product Capabilities 2.66. Thus on the basis of analysis studies can be conducted within as well as with other organisations to measure the maximum and minimum opportunities offered by Electronic Commerce on all Components of Business Value within and with other organisations as well.
3) ***Finance***- Findings shows that **Customer Relationship which is 3.20** has maximum advantage on Finance industry where as Customer Service is 3.18, Brand Image 3.0, Direct saving 2.93, New Business Models 2.90, Product Promotion 2.78, Time to Market 2.63, New Sales Channel 2.35, New Product Capabilities 2.90, Technology Learning 2.90. Therefore analysis shows that

opportunities offered by EC have taken full advantages on Customer Relationship which can be further studied to analyse the advantages on Customer Relationship with this particular industry as well as on other Business Value Components within and with other service organisations having maximum and minimum advantages and opportunities offered by Electronic Commerce.

4) ***Insurance-*** Analysis shows that **Customer Relationship** has maximum Impact on Insurance companies, which is **2.90** followed by Direct saving 2.88, Customer Service 2.80, Brand Image 2.70, Product Promotion 2.60, Technology Learning 2.60, New Sales Channel 2.55, Time to Market 2.53, New Business Models 2.50, New Product Capabilities 2.23. Thus Comparing within service organisations survey may be conducted to find out maximum and minimum benefits offered by Electronic Commerce in building its image on any of the Business Value Components. It may be followed by other organisation as well.

5) ***Entertainment-*** Maximum Impact on Entertainment industry is on **Customer Service, which is 3.60** followed by Technology Learning 3.30, Brand Image 3.10, Product Promotion 2.80, Time to Market 2.70, New Sales Channel 2.50, Direct Saving 2.20, Customer Relationship 2.20, New Business Models 1.90, New Product Capabilities 1.20 which shows that maximum Impact on Customer Service is greater than the Impact of Customer Service on Consulting, Software, Telecommunication industries and minimum on New Business Models of Business Value Components, which can be further, studied comparing maximum and minimum opportunities within and with other service organisations offered by Electronic Commerce.

6) ***Consulting-*** Overall analysis shows that **Customer Service which is 3.22** has maximum and New Product Capabilities which is 2.33 has minimum Impact on Consulting Companies followed by Direct Saving 3.01, Time to Market 3.02, Brand Image 3.09, Customer Relationship 3.09, Product Promotion 2.94, New Sales Channel 2.93, New Business Models 2.62, Technology Learning 2.61. Comparing with other organisations Customer Service has maximum Impact on Entertainment, Software, Telecommunication industries which can be further analysed to find out the maximum and minimum opportunities offered by

Electronic Commerce on building Customer Service of Business Value Components and may be followed within as well as with other organisations.

7) ***Software-*** On the basis of analysis **Customer Service** has maximum Impact on Software industry which is **3.33** comparing with Entertainment, Consulting, Telecommunication where Customer Service has maximum Impact, analysis shows that after Customer Service maximum Impact is on Customer Relationship 3.25, Brand Image 3.23, Product Promotion 3.01, Technology Learning 3.02, New Business Models 2.95, Time to Market 2.83, Direct Saving 2.77, New Sales Channel 2.61, New Product Capabilities 2.54 of software industry. This shows that software industry have taken full advantage on Customer Service of the opportunities offered by Electronic Commerce comparing with other Business Value Components which may be further studied within as well as with other organisations.

8) ***Telecommunication-*** Again Telecommunication has maximum Impact on **Customer Service, which is 2.91** and minimum on New Business Models 2.06 followed by Brand Image 2.69, Product Promotion 2.62, Time to Market 2.51, Technology Learning 2.47, Direct Saving 2.42, New Product Capabilities 2.33, and Customer Relationship 2.29. Thus Comparing with Software, Entertainment, and Consulting industries shows maximum Impact with respect to other Business Value Components advantages offered by Electronic Commerce, which may be followed within as well as with other organisations.

9) ***Education-*** Electronic Commerce shows maximum Impact on **Direct Saving, which is 2.82** and minimum on Technology Learning, which is 1.84 followed by Customer Relationship 2.68, Product Promotion 2.66, New Sales channel 2.62, Time to Market 2.56, Customer Service 2.50, Brand Image 2.50, New Product Capabilities 1.90, New Business Models 1.90 on Education industry. Although results of analysis shows maximum and minimum Impact but still there is a need to study other opportunities offered by Electronic Commerce within as well as with other service organisations on Business Value Components.

10) ***Others***- Overall analysis on Others companies of service organisations shows mostly marketing and manufacturing has maximum Impact on **Direct Saving which is 2.64** and Customer service again which is 2.64 followed by Product Promotion 2.57, Brand Image 2.57, Time to Market 2.53, New Sales Channel 2.21, Customer Relationship 2.21, Technology learning 2.05, New Business Models 1.8, New Product Capabilities 1.69. Thus opportunities and benefits offered by Electronic Commerce have given full advantage to Others companies building Direct Direct Saving of the Business Value Components, which may be followed by comparing with other as well as within service organisations.

5.3 Limitations of Research

- Cooperation of respondents is serious problem in a survey-based research. This was so in this study also. It was difficult to get respondents full cooperation, because of their lack of interest. They had doubts about the utility of the study. They were of the view that such studies hardly result result in betterment of their organisation.

- Some of the respondents had genuine difficulty in understanding the questionnaire, as Electronic Commerce is a new term for them though a sincere effort was made to keep the questionnaire as simple as possible. Before carrying out the survey, it was pretested on a selected sample. By and large they found filling questionnaire easy, though some of them found it difficult also.

- The survey includes only ten service organisation others may not included and could be worth investigating in future researches in this area.

- In view of the limited resources and time for disposal the sample size was confined to 135 firms.

- Research has increasingly become costly both in terms of time and money.

- The duration of the course has a time limit and the research is expected to complete the study within the prescribed time.

5.4 Future Directions for Research

In the context of limitations of the study and to enhance the scope of the analysis, some of the potential areas where further research can be undertaken.

- The research study has substancial scope of extension both in terms of breath as well as depth. Breathwise it may be extented to several other groups of organisation. Depthwise, there is enormousscope of enlargement of this research effort. The diagonsis of problem of Impact of Electronic Commerce on Business Values is one aspect only other similar problems should act as launching pad for investigation and comprehensive studies for further research.
- The study could be done on more than 135 firms; generalization of the findings could be possible.
- Same kind of research studies may be conducted in other countries, or comparative studies can also be done between/among countries.
- Case based studies of Impact of Electronic Commerce on Business Values could also be conducted to bring out issues that are otherwise difficult to cover.

Appendix –I

Basics of Electronic Commerce

The areas where Electronic-Commerce is being used:

1. Provide a mechanism to the user to search, select & compare items before purchasing.
2. Inventory keeping for the warehouse (based in Italy) for some items.
3. Mechanism for communicating the delivery mode for samples and order to the transportation or Courier Company.
4. Mechanism for tracing buying habits for the buyer.
5. Mechanism for identifying the geographical location of the customer for taxation purposes.
6. Multiple currency option for different regions.
7. Multiple language support for different regions.
8. Customized pricing discounts (Volume and Professional, Region wise) based on the category of the buyer –Professional or Public.
9. Blocking of products from certain markets. Like the region of the manufacturer.
10. Personalized Portfolios for site visitors, buyers.
11. Mechanism for generating a person for size measurement of the products.
12. Image storage for all items.
13. User facility to zoom in zooms out while viewing images for color refinement.
14. Downloading facility of AutoCAD and Line drawings of each item for professional buyers.
15. Mechanism for calculating sales tax and VAT so as to benefit the business.
16. Easy selection of the required item for the buyer based on web site's own advisory criteria.
17. Links to various sites of similar nature like manufacturers, artist's etc.
18. Marketing function for target marketing, distributing brochures and promotion of items.
19. Tracking delivery mechanism and final delivery through the system.
20. Returned goods to be diverted to another buyer through the system.
21. Email order-booking facility.
22. Uploading of images, specifications, new items from local manufacturers and Content updating from the office based in Italy.
23. Storing the data on professionals visiting the site for marketing proposes and also keeping track of their browsing habits.
24. Sending samples for a fee.
25. Interface to the courier/transport companies for online status and MIS
26. Email Messaging between external suppliers (artists, manufacturers, warehouse, and customers).
27. Payment wallet for browser customer to browse and buy.
28. Facility for the merchant to initiate payment authorization offline also via telephone, in person, email so that sale can be effected using means other than online.
29. Facility for mobile users using Palm-tops or hand-held devices to shop on the site.
30. Facility for a customer to browse and keep the particular product on hold to buy later
31. Facility for the customer to purchase using different payment mechanisms or providers.

32. Facility for the customer to be authenticated by the certifying authority to get digital certificates using Private-Public Key Pair.
33. Facility for the customers to get the best buy options in various product categories or even to get any future discounts.
34. The financial information like payment tools, amount to be spent should be user controlled and hidden from the merchant and also from the acquiring institution or certifying authorities. The response time after the user has selected the goods in the shopping cart and final confirmation of transaction (payment transaction) should be smooth and should take should take the least amount of time lesser than during browsing and selection of the product.
35. Cookie authentication of the user required.
36. Customized greetings according to native culture of the user for different regions.
37. Number of hits on the sites which can also be classified according to geography specific hits to know from where the current users are coming and any such analysis.
38. Image display of products in the catalog should have zoom feature. Also a palette for color zoom should be there to resemble as closely to the actual color. Resolution should give user closest- to- reality idea of the original color of the product.
39. Search option to the user who is looking for a particular product. Especially for knowledgeable buyers.
40. Search Assistance, in case of buyers who require advice on selecting something, like question and answer concept for buying.
41. Consistency of the visual renderings of products across different browsers and different versions also. This functionality should be taken care of by the server and not by the client configuration (using EJB)
42. Any user should not be able to access the data directly in any way to provide for Security apart from SSL.
43. Mechanism for the end user to generate a digital signature for himself from the certifying authority.
44. The access time for loading the site should be very less for enjoyable browsing. The static content, Java classes or applets should not take a very long time to download and execute. The graphic rendering should also be fast.
45. The profile information of the user should be captured and used for analysis and personalization.
46. The volume of search requests will be high and also before searching, the user has to become a member. The response required is very fast. This has to be taken care of while designing the system. This requirement is independent of bandwidth considerations.
47. The intended users should have the capability to view the content in their language or in future the site should have the capability to cater to different countries and cultures. Internationalization of the site should be possible.
48. The intended users are on OS/2 Operating systems. The application should be able to handle this new set of users.
49. The content loading and updating has to be handled from a separate location close to the suppliers for loading latest info.
50. Facility to publish the site with a user-friendly interface for configuring different servers.

51. User should have the option of opening a globally roaming email account.
52. The user should be able to chat with anyone, publicly and privately with a user controlled access/rights control.
53. Bulletin Board facility for the users to communicate with each other on anything of interest.
54. Analysis of items of interest to the user (products, best buy, new items, reports, technical analysis for stocks, ticker etc.) using the user's personal profile.
55. Automatic generation and re-direction of newsletters, info to the users.
56. Search facility for searching WWW as well as the product catalog separately. A generic search engine, which gives the listings relevant to the user and his location. Combined result of all the popular search engines.
57. Display of a calendar specific to user's geographical location for entering dates and Schedules, timers etc.
58. Publishing of ad banner publishing on the site and pushing it to the user depending on his personal profile.
59. Provision of adding the site to an affiliate program for better reach and penetration.
60. Provisions of providing a voice chat option on the site.
61. The site will provide the latest stories on the top newspapers of the world/country.
62. The site will also have the top business news update international/national.
63. The site will also have a net poll kind of analysis with a yes/no response to the question of the day?
64. The site will also have choosing from a range of choices (like for personality of the millenium) and display the analysis based on all the hits in real time.
65. The site will have the listing of indices (like BSE, FTSE, NYSE, NSE etc) of all the relevant stock exchanges relevant to the geographical location as well as international ones.
66. Option for a celebrity chat.
69. Option for using Value Payable Post. (VPP) in India.
70. Option for shareware section from where users can download the stuff like utilities, virus scanners, browsers, and other user interest things.
71. Links to sites of user interest as per profile.
72. Archives of old celebrity chats or any other archive searchable/listed by date.
73. Integration with the existing SAP ERP of the enterprise.
74. Online inventory management and in case the product goes below the threshold level, the same should be purchased for the stock replenishment. This is applicable for items for which the inventory is maintained.
75. Online viewing of real time rates according to symbols and scrip names.
76. Giving the day's five best buy –best sell option to the users.
77. Online analysis technical analysis of scrips, opinion of experts.
78. Online trade request placement and order fulfillment for shares for NSE/BSE. (India).
79. Weather report for different areas country-wise and city-wise.
80. User feedback on suggesting links of interest to them to be added to the site.
81. Site surfing record or trace.
82. Helpdesk Feature
83. Site improvement suggestions
84. Company's Mainframe database is to be web-enabled.

85. Income Tax Calculator
86. Currency Converter
87. International Calendar
88. Complete Portfolio Management of the user
89. NAV calculation of closed and open-ended mutual funds
90. XML/XSL data transfer, interfaces and storage.
91. Cataloging of Products
92. Emails to be pushed to the user's system.
93. The site is to be hosted by an Application Service Provider.
94. Some other services:

- Tourist Information
- Updated stock info
- Online stock trading facility
- On line chat facility
- Links to news services for details
- Facility for the user to personalize his home page
- Browser based mail service
- Search links to popular search engines
- Links to online shopping
- Online discussion groups and forums
- Internet paging facility
- Fax over IP
- Voice over IP
- Internet games
- Online banking transactions
- Online loan applications and other financial facilities
- Links to embassies and consulates
- Links to who's who in the locality
- Links to government organizations
- Links to entertainment sources

- Info about educational institutions, hospitals etc

Specialised Services: -

In addition to the general services you can also have a portal site that offers **specialized services**. They could be a site

- Offering complete information on stocks all over the world and links with leading stock exchanges around the world, hence enabling online stock trading.
- Enabling users to see their telecom/electricity/ any other bill online
- Exclusively for all kinds of online financial services, loan applications etc.
- A site that offers health advice, details of diseases and related issues

Appendix –II

Business-to-Business and Business-to-Consumer Form of Electronic Commerce

The appendix covers the following points

- **Definition of B2B.**
- **A Brief History of B2B Electronic Commerce.**
- **Major Values of B2B E-Commerce for Both Buyers and Sellers.**
- **B2B Market Maker Models.**
- **Drivers and Inhibitors of Business-to-Business Electronic Commerce.**
- **The Business-to-Business Opportunity.**
- **Business to Consumer Definition.**
- **B2C Intangible and Tangible Services.**
- **Drivers/Inhibitors for Business-to-Consumer Electronic Commerce.**
- **B2C Recent and Near-Term Growth Rates.**
- **Business to Consumer Opportunity.**

Definition of Business-to-Business[1] (B2B)

In business- to- business electronic commerce, businesses use the Internet to integrate the value-added chain, which can extend from the supplier of raw materials to the final consumer.

A Brief History of B2B Electronic Commerce [2]

The recent hype surrounding B2B e-commerce might lead an observer to believe that it is a new concept. It isn't. Although the emerging market makers are new, B2B electronic commerce has a history that dates back more than twenty-five years. We trace the heritage of internet-based Electronic commerce back to EDI (Electronic Data Interchange), which allows businesses and their trading partners using a variety of systems to exchange information through a standard set of transactions over value-added-networks (VANs). However, EDI deployment and ongoing VAN charges have proven too onerous for all but the largest companies. As a result, it is estimated that only 25% of a typical "hub's" trading partners ("spokes") use EDI. So not only does a large population of businesses not use EDI, but those that do only realize its benefits with a small portion of their supplier base. We believe the major principle of EDI – reducing the process costs of intercompany trade – will live on. However, we believe as businesses continue to get more comfortable with the security, reliability and performance of the Internet t hat the use of EDI over expensive, proprietary VANs will give way to Internet-facilitated transactions.

Major Values of B2B E-Commerce for both Buyers and Sellers.

Buyer Benefits

Reduced Procurement Process Costs. The National Association of Purchasing Managers estimates that the average manual purchase order costs a company $79 to process, $38 of which is related to internal processing. Searching for products through the separate paper-based, outdated catalogs of suppliers, corresponding with these suppliers to clarify product and service specifications, availability, delivery, price, etc. and routing requisitions through the approval process manually is all terribly inefficient. The efficiencies of B2B e-commerce not only reduce costs related to the procurement process but also allow personnel to spend more time on value-added, strategic work.

Reduced Inventory Costs. A slow procurement process coupled with an inefficient supply chain leads to long lead times and bloated inventory. E-commerce helps buyers reduce inventory costs by improving the order process and increasing the speed at which suppliers can fulfill orders.

Reduced Rogue Purchases. Aberdeen Group estimates that 40-45% of corporate purchases of manufactured goods are made from suppliers other than those on a company's preferred vendor list. As a result, businesses are paying much more for goods and services than needs be the case. B2B e-commerce automates the procurement process and helps keep employees within corporate purchasing
guidelines.

More Choices and Better Pricing. Oftentimes, there are many suppliers from which a customer could be buying goods. However, whether due to a supplier's or its distributor's limited geographic coverage or the time and expense related to investigating all possible options, a customer is limited to certain suppliers and distributors. These suppliers and distributors are not always optimal as it regards numerous key-sourcing parameters, including quality, service, availability, delivery and price.

Supplier Benefits

Suppliers Reduce the Costs Associated with Sales. The Internet is a cheap, efficient and ubiquitous sales channel, not to mention that it works 24 X 7 without breaks, sick days, vacations or complaints. The nature of some customers and products will always require sales and distribution through traditional channels. However, there are many products sold and customers reached through existing channels because no better alternatives exist. The inefficiencies of these less-than-optimal channels typically reveal themselves in inflated costs and margin pressure. The Internet provides suppliers with a new alternative for selling products and services that don't necessarily require the "high touch" and related expenses of traditional channels.

Suppliers Reach New Customers Thereby Generating New Revenue Streams Altogether. In many markets, demand is extremely fragmented. Traditional sales and distribution channels are not limitless, so there are potential buyers that suppliers never reach. B2B market makers provide a venue in which vendors can peddle their wares to a brand new audience of potential customers.

Suppliers Reduce the Process Costs of Order Management. Due to the fact that suppliers and buyers often communicate by phone, fax and mail, the exchange of information is not only slower than if executed electronically but also more prone to error, which results in costly rework. By automating the exchange of information, B2B e-commerce helps suppliers reduce errors, speed up the order to cash cycle, focus employees on value-added functions, and improve customer satisfaction to boot. Obviously, buyers and suppliers don't operate in a vacuum. In other words, to a large degree, a buyer's efficiency is limited by the efficiency of its suppliers and vice versa. Clearly, B2B e-commerce allows businesses to utilize the Internet to automate the workflow of many different processes including manufacturing, finance, sales, and purchasing. The Internet can also be used to increase information flow within an enterprise and outside of it creating a "virtual enterprise" that spans the entire "value chain," which includes customers, suppliers, distributors, etc. All in all, the Internet provides businesses with the ability to increase operational efficiency by reducing the

time, costs and resources required to transact business, lowering inventory levels and procurement costs, and improving responsiveness to customers and suppliers.

B2B Market Maker Models

Internet-based market makers, the latest incarnation of B2B e-commerce, come in different variations. The current market makers usually employ one or more of four basic models – catalog, auction, exchange, and community – which are outlined below. The critical component for success with all of these models is a clearly identifiable benefit for both buyers and sellers. Those that don't have this will have difficulty attracting the critical mass of buyers and sellers necessary to drive liquidity.

Online Catalogs. Online catalogs are optimally suited for markets where the supply and demand sides of a market are highly fragmented. SciQuest and Chemdex in life sciences are examples of vertically focused players in this category. Ariba, CommerceOne, and PurchasePro in MRO (maintenance, repair, and operating supplies) are horizontally focused market makers. Essentially, these market makers take the paper-based catalogs of multiple vendors, digitize the product information and provide buyers with one-stop shopping over the Internet. However, the fact that, in most cases, these market makers embed themselves in the business processes and IT systems of buyers and suppliers, reduce process and inventory costs, extend supplier reach, and improve customer access to suppliers makes their value much greater than just digitizing catalogs. Online market makers allow buyers to search for products more efficiently. Instead of flipping through a mountain of separate, often out-dated, supplier catalogs, buyers can utilize the powerful search capabilities of the Internet to compare products on many dimensions including price, availability, delivery dates, warranty, service information, etc. The prices of products on these sites are typically fixed. Online catalogs usually derive revenue from the combination of a percentage of gross transaction values, typically in the low single digits to the mid-teens, as well as product listing and advertising fees from suppliers.

Auctions. Auctions provide a venue for the purchase and sale of unique items such as surplus inventory, used capital equipment, discontinued goods, perishable items, or

refurbished products. Examples, among many, include Free Markets, a reverse auction for manufactured inputs, and Trade Out or AsseTrade, auctions for asset procurement and disposition and excess inventory. In addition, vertically focused companies like Paper Exchange, which is predominantly (as its name suggests) a market maker in pulp and paper, also generate ancillary revenues from the auction of paper-related capital equipment. Auction pricing is dynamic. In a traditional auction, the competitive bidding process results in upward price movement. The reverse auction, a format in which sellers compete for a buyer's offer to purchase, results in downward price movement. Revenue for online auctioneers is usually derived from the combination of transaction fees typically ranging from the high single digits to the low twenties as a percentage of gross merchandise value as well as product listing and supplier advertising fees.

Exchanges. Exchanges provide a spot market for commodities – often with high price volatility. They provide a venue for the purchase and sale of commodities like natural gas, electricity, and telecommunications bandwidth. Altra and Enermetrix in natural gas and electricity and Arbinet in telecommunications are all prominent examples. These markets are bid/ask and provide real-time pricing. Exchanges allow buyers and sellers to trade anonymously, which is key because identifying buyers and sellers can damage their competitive position and skew pricing. Although market share is important in every market maker category, we believe it is of paramount importance for exchanges. This is because market share means liquidity. Exchanges without significant liquidity are likely to fail due to the relatively small transaction fees they extract. However, exchanges that do attain leading market share should have extremely defensible competitive positions because offering the most liquidity will make trading on a competitive exchange less compelling. Exchange revenue typically comes from the combination of transaction fees as well as membership fees. Transaction fees usually range from a spread of a few basis points to percentage spreads in the low/mid single digits.

Community Market Makers. Community market makers bring together potential buyers and sellers, in the form of professionals with common interests, through web sites that feature industry-specific content and community aspects. The content and

community aspects these sites typically provide include industryspecific news, editorials, market information, job listings, chat, message boards, etc. As a result, these community market makers attract a targeted audience of potential buyers for suppliers. For the most part, community market makers generate revenue from advertising, sponsorship and membership fees as well as from fees paid by suppliers for lead generation. Although in most cases minimal transaction revenue is actually generated on these sites today, we believe this will change over time as these community market makers either add transaction-oriented market mechanisms onto their sites or generate revenue by driving traffic to the commerce sites of others. With over fifty sites ranging from pollutiononline.com to adhesivesandsealants.com, Vertical Net is the "poster boy" for community market makers. The B2B Market Maker Book – 3 February 2000 in summary, today, many of the aforementioned market models are separate entities even within specific vertical industries. However, over time we would expect to see some convergence where, for instance, the catalog, auction and exchange pricing mechanisms for, say, the chemicals industry, take place on one site. Furthermore, as we are already seeing with VerticalNet, we would expect to see community-based market makers monetize eyeballs through revenue streams beyond advertising, sponsorship and lead generation fees. In other words, transaction-based revenue.

Drivers and Inhibitors of Business-to-Business Electronic Commerce [3]

In business-to-business e-commerce, three factors are likely to lead to quick adoption of e-commerce: *i)* a reduction in transaction costs and improvement of product quality/customer service; *ii)* a defensive reaction to competitors engaging in e-commerce; and *iii)* insistence by large businesses that all of their suppliers link into their e-commerce system as a condition of doing business.

The Business-to-Business Opportunity [4]

As businesses move forward, the emergence of the Internet and B2B commerce provide even greater opportunities for growth and efficiencies. Today's companies are increasingly folding B2B commerce technologies and structures into their businesses, achieving drastic improvements in how they buy, sell and serve their customers. The new B2B digital economy carries potential almost beyond measure. Forrester Research estimates that Internet-based electronic business relationships will account for $1.3 trillion in sales by 2003. A GartnerGroup report places this figure much higher – at $7.2.trillion. In the years ahead, the explosive convergence of Internet technology and new business models will fundamentally change the commerce processes of almost every industry. This shift will result in a rich pay-off for companies that Internet-enable their operations, and make obsolete those that fail to keep up. To achieve these benefits, companies will need to clearly understand new B2B commerce models and develop solid plans for how they will evolve their buying, supplying and market-making processes. They will need to put a comprehensive commerce management "backbone" in place to react agilely to evolving technologies and business models.

Definition of Business-to-Consumer [5] (B2C)

The Business Consumer category largely equates to electronic retailing. This category has expanded greatly with the advent of the World Wide Web. There are now shopping walls all over the Internet offering all manner of consumer goods, from cakes and wine to computers and motorcars.

B2C Intangible and Tangible Services [6]

The largest segment of business-to-consumer e-commerce involves intangible products that can be delivered directly to the consumer's computer over the network. It is composed of five broad categories: entertainment, travel, newspapers/magazines, financial services, and e-mail.

To date, the main tangible products sold electronically have been electronics (including computers), books, clothing and food/drink. Behind these broader categories are speciality-item merchants (books, flowers, and music CDs) that add value by providing a wider selection, more information about a product, or convenience. Even some of the most tangible of all house old items (groceries, houses, cars) are now sold electronically.

Drivers/Inhibitors for Business-to-Consumer Electronic Commerce

Factors influencing growth in business-to-consumer electronic commerce differ significantly from those that affect business-to-business electronic commerce. They are more likely to limit its growth and to hold it to 10-20 per cent of the overall total in the near term. While competition may force businesses to engage in business-to-business e-commerce, the business-to-consumer segment faces barriers such as concerns about security of payment, potentially fraudulent merchants, privacy of personal data, and difficulty and expense in accessing e-commerce merchants. In addition to these legal and psychological barriers, three economic factors will have a large impact on the growth of business-to-consumer electronic commerce: *ease and cost of access*, *convenience*, and the *appeal of mass customisation.*

B2C Recent and Near-Term Growth Rates

To comprehend how business-to-consumer electronic commerce may look over the near term, it is useful to look first at growth over the past few years. While it is easy to have fast growth rates from a small base, many start-ups have rapidly become important

competitors in their industry. This suggests that e-commerce is more than a novelty item for select market niches.

- Amazon.com is now the fifth largest US bookseller, and book sales by electronic commerce now represent 20 per cent of all book sales in the United States.Over six quarters, to mid-1997, the number of books sold grew by 3 066 per cent (Morgan Stanley Dean Witter, 1997).

- Ticketmaster reports that its online sales of tickets to events such as concerts or sporting events have increased to $19.8 million per quarter, up by 270 per cent from the first quarter of 1997 to the first quarter of 1998, and now account for 3 per cent of all its domestic ticket sales, up from 1 per cent in 1997.

- Online retail trading of stocks accounts for 17 per cent of all US retail stock trading activity in 1997, double the 1996 share (Newsedge, 1998); 41 per cent of all stock trades made by Charles Schwab, the largest US discount broker, were conducted on line in the first quarter of 1998, up from a third in 1997 (Kehoe, 1998).

- E*Trade increased the number of its active accounts by 243 per cent over the same period (Morgan Stanley Dean Witter, 1997).

- Auto-By-Tel's share of references resulting in a car sale, as a share of the total number of US domestic units sold, has increased from 0.33 per cent in the first quarter of 1996 to 1.88 per cent in the first quarter of 1997 (Meeker, 1997). Its revenue grew by 418 per cent over six quarters to mid-1997 (Morgan Stanley Dean Witter, 1997).

- In 1996, independent travel agents handled 80 per cent of US airline reservations; by 1998, their share had fallen to 52 per cent, with airlines dealing directly with customers via the Web or telephone (Kehoe, 1998). The American Society of Travel Agents estimates that 1 per cent of all US airline tickets were sold on line in 1997 (Margolis, 1998).
- – In terms of merchandise sold on line, AOL has seen growth of 90 per cent from the beginning of 1996 to mid-1997. Subscribers' visits to the AOL Marketplace rose from an average of two in the first quarter of 1996 to 11 in the first quarter of 1997 (Morgan Stanley Dean Witter, 1997).

The estimates represent a deepening of activity across the fairly narrow group of sectors that are currently aggressive users of electronic commerce. By 2001-02, larger sectors – banking, insurance, bill paying/ postal services – which are currently testing or developing e-commerce products will become more actively involved. Many of these

services now use proprietary software or networks to provide services to a select group of customers. Over the next few years, these services will migrate to the Internet and will probably use a standard browser as the interface for their service. Coupled with more ubiquitous access devices, such as set-top boxes for TVs, it will be possible to offer the service to a much wider range of users and to begin to diffuse electronic commerce widely.

Business to Consumer Opportunity

-Internet provides an ever-growing market both in terms of number of potential customers and geographical reach. Technological development has made access to Internet both cheaper and faster. More and more people across the globe are accessing the net either through PCs or other devices. The purchasing power and need for quality service of this segment of consumers are considerable. Anybody accessing Internet is a potential customer irrespective of his or her location. Thus, any business targeting final consumers cannot ignore the business potential of Internet.

-Internet offers a unique opportunity to register business presence in a global market. Its effectiveness in disseminating information about one's business at a relatively cost effective manner is tremendous. Time sensitive information can be updated faster than any other media. A properly designed website can convey a more accurate and focussed image of a product or service than any other media. Use of multimedia capabilities, i.e., sound, picture, movies etc., has made Internet as an ideal medium for information dissemination. However, help of other media is necessary to draw the potential customers to the web site.

- The quality of service is a key feature of any e-commerce venture. The ability to sell one's product at anytime and anywhere to the satisfaction of customers is essential for e-business to succeed. Internet offers such opportunity, since the business presence is not restricted by time zone and geographical limitations. Replying to customers' queries through e-mail, setting up (Frequently Asked Questions) FAQ pages for anticipated queries, offering interactive help line, accepting customers' complaints online 24 hours a day and attending to the same, etc. are some of the features of e-business which enhance the quality of service to the customers. It is of crucial importance for an e-venture to realize that just as it is easier to approach a customer through Internet, it is equally easy to lose him. The customer has the same facility to move over to another site.

-Cost is an important issue in an e-venture. It is generally accepted that the cost of overhead, servicing and distribution, etc. through Internet is less compared to the traditional way of doing business. Although the magnitude of difference varies depending on the type of business and the estimates made, but there is unanimity that Internet

provides a substantial cost advantage and this, in fact, is one of the major driving forces for more number of traditional business adopting to e-commerce and pure e-commerce firms to sprout.

-Cost of communication through WWW is the least compared to any other medium. Many a time one's presence in the web may bring in international enquiries, which the business might not have targeted. The business should have proper plans to address such opportunities.

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Appendix –III

Electronic Commerce in Selected Sector of Economy

- *Travel Industry*
- *Banking Industry*
- *Finance Industry*
- *Electronic Retail Industry*

The appendix covers Electronic Commerce in selected sector of economy, which is described below in detail.

- **Travel Industry**
- **Banking Industry**
- **Finance Industry**
- **Electronic Retail Industry**

Travel Industry[1]

In many ways, the travel industry is the best example of an industry profoundly transformed by technology. Historically, industry has been an early adopter of new technology; the travel industry currently relies on an outdated distribution network, essentially relying on third parties. In recent years, travel agencies made use of a specialized technology infrastructure and specific knowledge, to justify their cost. New technologies are progressively rendering this infrastructure obsolete as providers begin to understand how to deliver information directly to their customers, through phone, fax, electronic mail and increasingly, through multimedia interactive systems. This endangers the travel agencies, which will need to reposition themselves. The new providers, often driven by technology, also need help in adjusting their offerings to their customers, as they often use technology-driven strategies rather than business-driven. The current mass of undifferentiated travel offerings on the Internet is one example of such shortcomings.

Every organization currently active in the industry will be affected, from airlines to travel agencies, from large corporations to small and medium enterprises, and certainly individual travelers. It is crucial to understand these changes today, in order to plan for tomorrow.

Electronic commerce technology can be used to increase convenience (*product leadership*) in buying travel (workflow automation, links with information servers, reservations from a laptop while traveling), reduce transaction costs (*cost advantage*, by suppressing unnecessary human intervention) and improve the service delivered to individual users (*customer focus*).

- supporting a product leadership strategy: technology can definitely enhance some product attributes, especially for service industries such as travel where most attributes are intangible. In our case, electronic commerce can add to the

convenience of getting information about travel and purchasing, for instance by freeing customers from time or place constraints. Moreover, even though it is not exactly clear today how electronic commerce adoption will unfold in the next few months, it seems clear that it will be a major success factor in a few years, therefore making it important to learn now about these new technologies and their organizational impacts in order to maintain leadership;

- supporting a cost advantage strategy: technology can be used here to promote products in a cheaper and more interactive way. Through the use of multimedia information (sound, image, video), customers are able to better understand the products (be it a hotel room, a rental car or a beach) without the need for specialized personnel on the service provider side. This also saves money in terms of printing (quickly outdated) advertising material, handling sales through a phone hotline and delivering paper tickets;

- supporting a customer focus strategy: technology can help corporations maintain and enhance relations with their customers, for instance memorizing their preferences and anticipating their needs or targeting them with specific offers; mass-customization is another avenue, offering customers products especially targeted to their needs, for instance by integrating sub-products from different suppliers and repackaging them in one offer.

Then, we need to look at how these new technologies will offer opportunities for new products and/or new actors. An example of new product attributes could be knowledge database accessible on-line, and gathering travel experiences. Before making your choices for a specific destination, you would review this database and see (good and bad) recommendations about specific providers in that destination. This database could also support e-mail exchanges between travelers and would create a virtual community of travel enthusiasts.

Finally, we can examine the intermediation issue within the industry. Very often, intermediaries have been created by an information asymmetry, or arbitrage opportunities. New technologies improve the diffusion of information to everyone, thereby reducing the power of existing intermediaries. Also, as mentioned above, the use of a public shared infrastructure (such as the Internet) rather than a proprietary network (such as a CRS) removes a strong advantage from the former exclusive users of such a network, the travel agencies. These agencies will have to provide a different added value service than simply being an information intermediary; we'll see in the next section what other opportunities are open to them.

Although disinter mediation will definitely happen in that industry, re-intermediation will also be seen. This means that customers won't always find it desirable to go to different providers directly to get information (such as timetables or fares), and them compare it, but will sometimes pay an intermediary to do it for them. In other words, they'll need to reduce their search costs. This could be done by a travel agency, but also by an automated agent or, until this technology matures, by a CRS offering direct customer access or a new kind of online travel agency. The Internet today is home to hundreds of providers (airlines, hotels, travel agents) offering their services directly. As in other industries, there will be a need to differentiate among all these offerings, and strong brand names will prevail. As such, the choice or recommendation of travel magazines, well-known airlines or early adopters able to capture public interest will be of prime importance. For instance, the Condé Nast Traveler magazine created a Web site to leverage their brand name and create a virtual community of travel fanatics. These are the type of new actors one can expect to see emerge in the travel industry.

Travel agencies catering to the needs of leisure travelers should have a different approach. The issue here is about differentiation from the competition, knowing that low costs alone won't suffice. We believe technology has a role to play in enhancing the shopping experience. Today, going to a travel agency to purchase a holiday package is frequently not a very pleasant experience -- long wait times, shuffling through paper catalogs and waiting for phone calls to suppliers are not attractive. Technology could eliminate those shortcomings through kiosks, supporting multimedia clips, databases of relevant travel, visa and destination information, etc. (*product promotion* and *new product capabilities*).

A major issue in the travel agency industry is the entry barriers that technology increasingly represents. Implementing the changes outlined above will require large amounts of capital and expertise, and small players might find it harder to compete, leading to increasing industry concentration. On the other hand, the open nature of the Internet can reduce barriers for small expert and creative companies. How the two will balance out remains to be seen.

Computer Reservation Systems

CRS today have an enviable position; they already have a developed technology infrastructure, links with major corporate customers and good connections with product suppliers. Following the success of the Internet, major CRS recognized that their added value would come from the information they possess, rather than the technology they can implement across the world. Therefore, SABRE for instance recently outsourced some of its data and network operations, and Apollo developed United Connection, an on-line service offering travel reservations through a PC interface.

Migrating to the Internet is a first step (*new sales channel*), but CRS will have to become better at integrating all the travel information currently available. The Web today supports hundreds of travel agencies, small products suppliers, and other tourism destinations. What is currently lacking is good navigational support. We have described elsewhere 6 our vision of travel integrators who will understand customer needs, select the right information on the Web for them, package and present it attractively before processing their transactions in a secure way (*new product capabilities*). Such systems will provide destination information (on the city or region, good restaurants and museums, required visas), find the best way to get there (airlines, hotels), and offer to buy multiple products useful for such a trip (from travelers checks to cameras).

Product suppliers

In the context of the whole industry, the general trend has been to sell directly to customers, in order to reduce the large distribution costs encountered today. This sometimes causes inconveniences to the customer, which airlines for instance seek to remove by offering added benefits to customers reserving directly. Swissair for instance recently announced that customers reserving by phone through their own offices could get their boarding pass in the mail, and therefore come to the airport only minutes before the airplane leaves (*customer relations*). This benefit is not offered to customers going through travel agencies.

Product suppliers such as airline companies, hotel chains or destinations will also try to leverage electronic commerce as new distribution channels, reducing the cost of their

promotion, and improving their reach. The key here is to find a differentiating factor from the competition, as most of these online marketing efforts appear similar. Being part of a larger construct, with good advertising and a strong brand name should be key to drive online traffic and ultimately sales. An information mall or a travel integrator as described above could be a good position for a smaller product supplier.

The issue for these product suppliers is to maintain their sense of identity online, and keep an access to their customer data. More and more, the exact knowledge of customer profiles, the details of their buying processes and the linked products they buy is key to successful marketing. If product suppliers lose a direct customer access, they might get pressured by their distributors, which will increasingly own this precious information.

It was stated in the introduction that travel was only one of the industries, which will be strongly affected by electronic commerce. Therefore, the changes that we already see emerging there are of primary interest and can be extrapolated to other industries.

Banking Industry[2]

Internet Banking for Business is one of the new, fast growing, applications of e-commerce Internet banking will change the nature of banking. Banks have traditionally been in the forefront of harnessing technology to improve their products, services and efficiency. They have, over a long time, been using electronic and telecommunication networks for delivering a wide range of value added products and services. The delivery channels include direct dial – up connections, private networks, public networks etc and the devices include telephone, Personal Computers including the Automated Teller Machines, etc. With the popularity of PCs, easy access to Internet and World Wide Web (WWW), banks increasingly use Internet as a channel for receiving instructions and delivering their products and services to their customers. This form of banking is generally referred to as Internet Banking, although the range of products and services offered by different banks vary widely both in their content and sophistication.

Broadly, the levels of banking services offered through INTERNET can be categorized in to three types: (i) The Basic Level Service is the banks' websites which disseminate information on different products and services offered to customers and members of public in general. It may receive and reply to customers' queries through e-mail.

(ii) In the next level are Simple Transactional Websites which allow customers to submit their instructions, applications for different services, queries on their account balances, etc, but do not permit any fund-based transactions on their accounts.

(iii) The third level of Internet banking services are offered by Fully Transactional Websites which allow the customers to operate on their accounts for transfer of funds, payment of different bills, subscribing to other products of the bank and to transact purchase and sale of securities, etc. The above forms of Internet banking services are offered by traditional banks, as an additional method of serving the customer or by new banks, who deliver banking services primarily through Internet or other electronic delivery channels as the value added services. Some of these banks are known as 'virtual' banks or 'Internet-only' banks and may not have any physical presence in a country despite offering different banking services.

From the perspective of banking products and services being offered through Internet, Internet banking is nothing more than traditional banking services delivered through an electronic communication backbone, viz, Internet. Some of the distinctive features of i banking are:

1. It removes the traditional geographical barriers as it could reach out to customers of different countries / legal jurisdiction. This has raised the question of jurisdiction of law / supervisory system to which such transactions should be subjected.
2. It has added a new dimension to different kinds of risks traditionally associated with banking, heightening some of them and throwing new risk control challenges.
3. Security of banking transactions, validity of electronic contract, customers' privacy, etc., which have all along been concerns of both bankers and supervisors have assumed different dimensions given that Internet is a public domain, not subject to control by any single authority or group of users.
4. It poses a strategic risk of loss of business to those banks who do not respond in time, to this new technology, being the efficient and cost effective delivery mechanism of banking services
5. A new form of competition has emerged both from the existing players and new players of the market who are not strictly banks.

The world over, central bankers and regulators have been addressing themselves to meet the new challenges thrown open by this form of banking. Several studies have pointed to the fact that the cost of delivery of banking service through Internet is several times less than the traditional delivery methods.

Several types of relationships make up the banking marketplace

- Bank to consumer
- Bank to business
- Consumer seller to consumer buyer (C2C)
- Business seller to consumer buyer (B2C)
- Business seller to business buyer (B2B)

No one knows what the future holds for banking. Predictions are plentiful and arbitrary at best. However, few dispute that the popularity of Internet banking will rise. According to sources, 3.5 million households were using online banking in 1997, and by 2003 that number will rise to 25.2 million. Faster connections, cables lines that leave computers continually online, and growing Internet access will expand the popularity of Internet

banking. Web TV and new wireless devices mean consumers don't even need a computer to bank online. Internet banking, both as a medium of delivery of banking services and as a strategic tool for business development, has gained wide acceptance internationally and is fast catching up in India with more and more banks entering the fray. India can be said to be on the threshold of a major banking revolution with net banking having already been unveiled. A^3 recent questionnaire to which 46 banks responded, has revealed that at present, 11 banks in India are providing Internet banking services at different levels, 22 banks propose to offer Internet banking in near future while the remaining 13 banks have no immediate plans to offer such facility. At present, the total Internet users in the country are estimated at 9 lakhs. However, this is expected to grow exponentially to 90 lakhs by 2003. Only about 1% of Internet users did banking online in 1998. The growth potential is, therefore, immense.

Costs of banking service through the Internet form a fraction of costs through conventional methods. Rough estimates assume teller cost at Re.1 per transaction, ATM transaction cost at 45 paise, phone banking at 35 paise, debit cards at 20 paise and Internet banking at 10 paise per transaction. The cost-conscious banks in the country have therefore actively considered use of the Internet as a channel for providing services. Fully computerized banks, with better management of their customer base are in a stronger position to cross-sell their products through this channel.

Details of current services of Internet banking

Account Monitoring

- Real Time Account Balances
- View Transactions
- Confirming Interest
- Online Statements and Ordering
- Electronic Statements
- Customised Reports
- Financial Planning Calculators

Account Management

- Real time Account Management
- Bill Payments
- Funds Transfers
- Order Cheques and Cheque Books
- Apply for Credit Cards
- Credit and Charge Card Payments
- Apply for Term Deposits
- Apply for Loans
- Change PINs and Passwords
- Change Address and Account Details
- Order Bank Cheques

Other Features

- Insurance Management
- Online Securities Trading
- Foreign Currency Transactions
- Currency Information
- Electronic Reminders
- Remote Applications
- Email Services
- Payroll Services
- Tax Credit Payments
- E-cash
- Financial Management Tools
- Specialist Trade, Securities and Agriculture Packages

E-Commerce in Retail Banking[4]

The impact of electronic commerce (e-commerce) on retail banks and in doing so it defines e-commerce, analyses the legislative and technological developments that govern its future evolution, and assesses the extent to which retail banks should adopt e-commerce strategies and how they should do so.

1. E-Commerce is not Achievable by Technology Alone.

Priorities must include successful implementation of knowledge management, customer-relationship management and an overall reorientation of the enterprise towards the customer. In the already crowded 'virtual high street', retail banks must also defend and reinforce their brand identities, and cater for an e-customer base that will judge an institution by the performance of its technology as well as by how well it delivers its primary commercial proposition. E-commerce is a new method of achieving and servicing a customer relationship which may operate alongside or independently of traditional methods. It is new in that it is evolving, so that retail banks must remain open to new technologies and newly evolved best-practice models, and in that it imposes a need to understand and master complex delivery mechanisms that require abilities beyond conventional banking skills.

2. E-Commerce Delivers Effective Control of the Point of Transaction to the Customer.

E-commerce is characterised by an emphasis on achieving effective front-line systems to render customer contacts user-friendly. This is because e-commerce requires only the presence of the customer and the relevant enabling technology. The retail bank's presence is not required. The retailer need not be aware of the transaction while it is happening. A smart-card transaction occurs between retail outlet and customer without reference to the bank and involves a customer-determined amount of value. Such a transaction does not require authorisation as it occurs because the required value has already been downloaded on to the card. The downside of engaging in any form of e-commerce, therefore, is that the retail bank effectively forgoes control of the point of transaction.

3. Every Stage of an E-Commerce Interaction will Impact Upon the Reputation of the Providing Bank.

From the speed of downloading of images to the 'tone of voice' of the written material on a website, for example, the positive or negative experience of any e-commerce transaction is credited first to (or debited first from) the reputation of the providing institution. This means that the customer's whole experience of a retail bank engaged in e-commerce is potentially contained in the single transaction-event. The customer can enjoy the transaction and like the bank, or pull the plug, all without interruption. The bank's reputation with the individual customer can be influenced by defective technology as easily as by an unsatisfactory service provision.

4. An Effective E-Commerce Strategy must be Supported by the Effective Communication of the Bank's Core Values to the Customer.

The customer should come away from any e-commerce transaction or other contact with a sense of the bank's character, purpose and identity (as these are intended to be perceived) as well as with, say, details of current accounts and interest rates. The baseline objective of any e-commerce strategy should be, therefore, to convey a package to the customer representing core values, in one or more easily accessible, user-friendly electronic formats. Due consideration should be given to supplying a personalised element (email, fax or postal confirmation of instructions represents an opportunity to add to the communication with the e-customer, for example), while providing a means to add value to the e-relationship.

5. Devising an Effective E-Commerce Strategy Requires Careful Analysis of the Business Case.

Key drivers towards e-commerce are:

- Customers are pressed for time and want to bank at hours convenient to them
- Financial institutions want to reduce their brick-and-mortar premises to save costs, as well as meet customer demand

An e-commerce strategy should be designed around goals including:

- Cost reduction
- Switching customer behaviour from one channel to a lower-cost one
- Increased customer retention

- Acquisition of new customers and increased value-added transactions

6. E-Commerce Requires Implementation of a Change-Management Strategy.

E-commerce is at an early stage of evolution. Customers will become increasingly competent in their use of e-commerce delivery platforms. Although market penetration of some enabling technologies (personal computers with internet access, for example) is sufficient for e-commerce to occur, best practice is not yet established. New technologies will appear, and usage of established technologies will change. Legacy research on customer behaviour will be invalidated. E-commerce will also change the retail environment in which banks operate. Retail banks must therefore plan and implement strategies for change.

7. Accessibility Matters More than Technology.

An accessible online presence matters more than the means whereby it is effected. PCs are not necessary to e-commerce and nor are other specific, individual technologies. But e-customers must find the bank, whatever technology they use to conduct their search and whether they are looking for the bank or a generic financial service. The Internet represents an electronic environment where banks may establish an accessible presence and enter into interactive relationships with their customer base. It is not necessarily – though in the short term it may remain – an environment where the main priorities are to devise a user-friendly website and to develop a policy for email communications. Websites, for example, become redundant if mobile telephones become the primary access mechanism for online information, because mobility limits screen size. It may be that, in future, Internet service providers will be succeeded by cable broadcasters or telecommunication companies, and that e-commerce in retail banking will require TV-presenting talent rather than website-design skills. But the customer still needs account information.

8. Where E-Commerce Removes the Personal Element of Retail Banking, it does not Achieve its Full Potential.

If e-commerce is treated as part of the overall commercial proposition, with bank managers and counter staff (or other point-of-contact staff, however designated) also available, three customer-service objectives may be achieved:

- 'Anytime, anywhere' banking for consumers of any net worth
- Direct relationship banking characterised by the consumer perception that it is controlled by the consumer
- The ability to supply value-added services beyond core banking products, quickly and efficiently
- E-commerce strategies cannot be operated in isolation from the overall commercial mix. Integration across the enterprise is a vital factor.

9. Due-diligence Problems may be Addressed by a Combination of Law and Technology.

The key questions relate to the enforceability of online contracts, the reliability of online signatures, and the potential liabilities arising from remote interaction with e-customers. Current standards of encryption provide verification of the counterparty, while established practice in online contracting is such that enforceability will generally rest upon whether closure entailed an extended series of email exchanges. The bank must provide detailed acknowledgement of the terms of an online contract by email, and the customer must acknowledge receipt of the bank's email. Only when this double acknowledgement is complete will an online contract be binding. Prudent retail bankers will tend to prefer PIN/password identification and paper verification until portability of electronic signatures is common practice, and until electronic signatures are intrinsic to the individual (as is the case with iris prints or fingerprints).

10. E-Commerce May Pose a Threat to Retail Banks.

The evolving pattern in e-commerce is for a 'lead provider' to issue the technology or the service, with 'secondary providers' supplying functionality beyond that provided by the lead provider. This may lead to a significant commercial disadvantage for secondary providers. For example, if a retail bank provides a smart card that can be used as a railway ticket, it follows that the bank will get credit for a pleasant journey. But if the railway company provides a card that can be used to go shopping and pay for lunch, the railway company gets the credit. This is why retail bankers should be alert to smart-card initiatives that are not led by the banking industry. The commercial priority is for retail banks to move towards lead-provider status in all their e-commerce initiatives.

11. The Effect of E-Commerce on Customer Expectation is that the Primary Product of Any Provider Must Be Efficient Delivery that Goes Beyond the Core.

Brand identity is significantly dependent on the effective operation of technology. Also, a best-practice standard is evolving for e-commerce whereby non-core added value is regarded as vital to ensure customer loyalty. A 'good' bank is one where the technology works quickly and efficiently, while an 'e-competitive' bank is one where the customer is provided with value-added reasons to tune in, visit the website and/or use the smart card. In this context, a key characteristic of e-customers is that they are effectively connected to the bank even when their requirement is not for a banking service, because they visit the same outlet to satisfy banking and non-banking requirements. The bank has the opportunity to satisfy non-banking requirements and may gain increased customer loyalty by doing so.

12. Providing Added Value is Necessary to Prepare Customers for Future Core Provision.

A user of an online banking service will grasp the techniques necessary to view account information and issue transfer instructions but will not necessarily develop familiarity with other techniques that are not required for effective use of that service. Therefore, introducing further core products to the service (online brokerage, for example) will not meet with automatic take-up by existing online customers. The required IT literacy will not necessarily be there. Retail banks increasingly regard initiatives to improve their online customers' familiarity with information technology as a key part of their e-commerce strategies. This should be achieved by a gradual increase in the functionality offered by the e-commerce service.

13. E-Commerce Requires Effective Customer-Relationship Management (CRM).

A retail bank must achieve presentation to the client of a 'single picture' of that client's banking activity, from current-account balance to, say, mortgage-application status. This is not simply because e-customers prefer dealing with an institution that can conduct a whole relationship through any single point of contact, but because if a bank seems unable to see the whole of the single picture, this may cast doubt upon its internal administrative efficiency and customer-service standards. The key determinant in

successful CRM is that the member of staff who is the point of contact with the customer should have access to all necessary information about that customer. Solutions to the difficulties in achieving CRM should focus on the orientation towards the customer that e-commerce necessitates.

14. E-Commerce Provision must be Strongly Branded.

Brand protection in the context of e-commerce is the protection of a retail bank's reputation and goodwill, in that these accrue from the provision of 'good' electronic products and services whether these are provided by the bank or only accessed through a bank-branded outlet. Commercial pressures oblige retail banks to provide access to other retail institutions' e-commerce provision through their outlets and, correspondingly, to secure access to their own provision through other outlets. The danger to the brand is the potential for confusion in the customer's mind as to who provided any given product or service.

Finance Industry[5]

The utilization of information and communication technologies is altering the way we communicate, organize work, and companies, do business and create economic values. The financial industry as we know it today is mainly based on ICT means concerning its processes, structures, products and channels of interaction. It would not work at all without a perfect running global information and communication infrastructure. Financial markets including its products and services nowadays are global markets and totally determined and shaped by ICT. The financial industry was one of the very first ones to utilize means of ICT back in the 1960's. Due to the immateriality of the business the industry is predestined for utilizing new technologies but is also vulnerable to its effects. Especially in information intensive industries like the financial industry, the fundamental changes of basic business models can be described very clearly and convincingly.

The development of financial services supported by information and communication technologies (ICT) can be assessed from two different perspectives. Electronic commerce, perceived as the utilization of the 'Net' and its services for additional communication, marketing, and sales channels, based on only very moderately changed business models, indicates an evolutionary path of development. However, beside this evolutionary development of electronic commerce stands a more revolutionary path of development.

When examining the current appearances within the financial industry, the following developments are perceivable: A general dis-integration of traditional value chains, at the same time a re-integration, resulting in emerging new intermediaries as important elements of emerging value webs, emerging new and reconfigured products, and a shift towards customer oriented service bundling as well.

An economy based on the digitization of information and the accompanying information and communication infrastructure is considered a digital economy. The way in which economic values are created will fundamentally change in the digital economy and thus transform the general structure of economic systems.

Electronic Retail Industry[6]

E-Commerce faces many challenges for retail industry. Technology and logistics barriers are making it increasingly difficult for the small retailer to enter e-commerce. Large goods providers do not have an easy to use delivery channel geared towards the end consumer, and they often lack the resources to provide customer support on the scale needed for direct retail sales. Current problems with e-commerce present several possible directions as well as opportunities for new services and products. We offer some possible directions for E-commerce in the future, and the factors we believe will determine the actual direction.

One strong possibility is that we will see more of the same. Some e-retailers now do an excellent job of providing the services and support needed for online retail. These companies tend to be organizations with experience in customer oriented remote sales such as catalog stores. For these companies, e-commerce involves adapting the new sales channel of the web to the existing infrastructure. As many large catalog retailers are already heavily involved with IT, they very frequently have the experience to be able to do this successfully. The customer service apparatus in place for catalog stores is also oriented towards serving the needs of online consumers.

One other possibility involves the emergence of new services and attitudes. If we combine the recent trend to more expensive gasoline with the emergence of an integrated network of local carriers specializing in low-cost delivery, new possibilities open up. The vision of the local mom & pop store being on the web may be possible. In this scenario, customers could log in and place an order. The load on any individual shop would not be large enough to require sophisticated order handling mechanisms, and customer attitudes towards reliability would have to undergo some downward revision. Delivery would be accomplished by the local delivery companies, perhaps driving regular routes that called on stores or distribution hubs for packages going to a particular area. This kind of service would require a much higher level of parcel traffic to make it practical. Larger online retailers might even take advantage of this kind of service by shipping to regional distribution hubs where the local delivery companies would take over.

Other factors will affect the emergence of e-commerce as well. Most e-commerce sights are graphics intensive and require fast Internet connections to make the shopping experience bearable. The ongoing battle between cable modems and DSL services will have to resolve some how. A megabit level Internet connection as the standard would greatly enhance the chances of e-commerce. This will also depend on solving the "Digital Divide" problem.

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Appendix –IV

Glossary

Questionnaire

Response Sheet

Useful Web Sites and E-Mail Ids of:

- *University Research Centres of Electronic Commerce*
- *International organisations in Electronic Commerce*
- *National organisations in Electronic Commerce*
- *Top Fifty Indian WebSites and their Origin*
- *Top Indian IT Companies*

References

Glossary of Commonly Used Internet and Electronic Commerce Terms.

ARPA	Advanced Research Projects Agency of the US Department of Defence.
ATM	Asynchronous transfer mode. A particular type of network technology that is designed to make it relatively easy to build high-speed hardware.
Adapter	The device that connects a piece of equipment (such as a PC) to the network and controls the electrical protocol for communication with that network; also called network interface card, or NIC.
Authentication	Non-Repudiation of Origin-The means of determining if a message really did come from the trading partner that it says it has.
Bandwidth	The capacity of a network, usually measured in bits per second.
Bulletin Board Service	An electronic service that permits one person to post a message for others to read. Each bulletin board contains discussion on a single topic. A bulletin board is sometimes called a computer conference.
Backbone	The part of the network that carries the heaviest traffic; it connects LANs, either within a building or across a city or region.
Bastion Host	A PC or other piece of computer hardware that acts as a point of entry for a secure internet connection, and kept loosely coupled with its host.
Client	A program that requests information or services from a separate server
Computer Network	A hardware mechanism that computers use to communicate. A network can be classified as a local area network (LAN) or wide area network (WAN), depending on the hardware capabilities.
Digital Certificates	A digital file issued by a Trusted Third Party (TTP) that contains the terms for opening and authenticating a message. It

	guarantees that the public key of the sender is indeed the property of the identified person or organisation.
Digital Signature	An encrypted method of assuring that a message was sent by the person claiming to send it.
E-form / Electronic Form	An on-line representation of a business form that can be accessed and completed in an online, interactive format. There is typically a means of exchanging the information entered with the recipient.
Digital cash	Issued by the bank, these electronic dollars or 'e-cash' are numerical reference numbers, similar to serial numbers on real currency, which let buyers pay for a product or service electronically.
E-mail	Messages sent in digital form via the Internet or a private network.
Electronic Commerce (EC)	The application of e-mail, EDI, electronic funds transfer, extranets, and other information-sharing technologies to conduct business online
Electronic Data Interchange (EDI)	Transferring business information from one computer application to another in a standard electronic format. EDI messages usually travel over a private, value-added network (VAN) but could go over the Net. Software at either end of the transmission translates the data into a format useful to users.
Encryption	Using computer hardware, software, or both to transform data from its original form into a cipher form for the purpose of security or privacy.
Extranet	A private network that uses Internet-based technology to link companies with suppliers, customers, and other partners.
Firewall	Software or hardware (or both) designed to protect a private network from unauthorized access.

Gateway	The means necessary to access another network e.g. Web-to-host Gateway.
Gopher	The name of an Internet browsing service in which all information is organised into a hierarchy of menus.
Hyperlinks	Embedded "hot spots" in Web pages that allow users to jump from one document to another document anywhere on the Internet.
Hub	The central connection point for a group of nodes; enables centralized management and provides the ability to isolate nodes from disruption.
Home page	The main page or directory of a Web site.
HTML (hypertext markup language)	A computer language used to write and encode documents and files on the World Wide Web.
Intranet	Based on Internet technologies, an internal network that operates much like the World Wide Web, accessible only to employees and other authorized users and protected by a firewall.
Internet	A global network connecting other networks and computers.
Local Area Network (LAN)	A computer network technology designed to connect computers across a short distance (e.g. inside a building).
Menu	A list of items from which a user can select.
Modem (Modulator-Demodulator)	A device used to transmit digital data a long distance across an analogue transmission path. Modems are used in pairs – one modem attaches to each end of the connection.
Network News	The name of the Internet bulletin board service
Newsgroup	Single bulletins board in the network news service. A single user can subscribe to multiple newsgroups: each newsgroup contains articles related to one topic.

Open Buying on the Internet (OBI)	An attempt to establish industry-accepted standards and practices for message transport and business-to-business purchasing over the Net. The OBI standard is primarily intended for MRO supplies procurement.
Protocol	In e-commerce terms a set of pre-defined rules for describing how computer devices on a network exchange information.
Private Key Cryptography	A method of coding and decoding information, which relies on an identical key, used for both encryption and decryption. It requires that both parties to a digital conversation know the same key.
Public Key Cryptography	A principal method of coding and decoding information on the Internet. There is no need to communicate a private key in advance. Each party communicates a public key which is used to encode messages to each other and decrypted using a private key which is known only to the owner.
Receipt Notification	The ability to determine if a trading partner received the information that was sent to them.
Router	Computer hardware that determines where to send information on a network based on addressing information within the message.
Remote Login	A service that allows a user on one computer to connect their keyboard and display to a remote computer and run programmes
SET (Secure Electronic Transmission)	An industry standard to enable secures credit card transactions on the Internet.
SSL (secure socket layer)	A protected data "tunnel" on the Internet for the secure transmission of funds and other private documents.
TCP/IP	Transmission Control Protocol / Internet Protocol. The principal network protocol for the Internet.

Trusted Third Party (TTP)	An organisation which issues digital certificates and is widely known and trusted. Must have well defined methods of assuring the identity of the parties to whom it issues digital certificates. The TTP may also maintain copies of digital keys.
TELNET	Internet remote login service. TELNET allows a user at one site to interact with a remote timesharing system at another site as if the user's terminal connected directly to the remote machine.
URL (Uniform Resource Locator)	The address of documents and other resources on the World Wide Web.
Value Added Network (VAN)	A company that maintains a common network, accessible to both trading partners in a business relationship. The VAN typically provides other services such as translation, logging, security and line speed conversion.
Virtual Private Network (VPN)	A means of connecting satellite offices for internal communications over a secure Internet connection, avoiding the need for costly, point-to-point, leased lines.
Web browser	Software applications that make it easy to access and navigate the World Wide Web.
Web page	A document on the World Wide Web.
Web server	A computer that hosts Web sites and pages.
Web site	A location on the World Wide Web containing subject- or company-specific documents and files.
World Wide Web	A system of Internet servers that support documents formatted in HTML, which allows electronic links to other documents and files.
XML (Extensible Markup Language	Sophisticated computer language that structures and standardizes data elements, allowing for the open and efficient transfer of business documents over the Internet.

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Dear Respondent:

- *I am collecting some information for my research work which aims at studying the impact of* ***Electronic Commerce (EC hereafter)*** *on the value of business.*
- *I shall be thankful if you would kindly spend your valuable 15 minutes and assign an appropriate rank to each question by putting tick mark.*
- *I shall be pleased to share with you the findings once the thesis is complete and the degree is awarded, if you so desire. Would you like to share? (Yes / No)*
- *Further I assure you that the information provided to me will remain strictly confidential and will have no commercial value.*

Thanking you.
Yours Sincerely

(Mairaj Salim)

Given below are the areas identified by the researchers wherein the EC increases business value Please rank the extent to which it is applicable in case of the organisation you represent - one having the minimum and five maximum impact. "NA" if not applicable in your case.

1. **Product Promotion:** ***E-commerce offers information rich and interactive customer contact and hence enhances promotion of products. Given below are five questions through which we need to get the above preposition verified.***

1.1	Please rank the extent to which has the EC helped your customers in collecting relevant information about the product?	1	2	3	4	5	NA
1.2	Please rank the extent to which has the EC helped your organisation in customizing products / services for individual customer?	1	2	3	4	5	NA
1.3	Please rank the extent to which has the EC helped your organisation in displaying range of products relevant to a particular customer?	1	2	3	4	5	NA
1.4	Please rank the extent to which has the EC helped your organisation in differentiating your product with that of the competitors?	1	2	3	4	5	NA
1.5	Please rank the extent to which has the EC helped your organisation the opportunities for new products?	1	2	3	4	5	NA

2. **New Sales Channel:** ***Direct reach to customer and the bi-direct nature of communication has opened new sales channel that has resulted in increase in sales. Given below there are some examples through which EC has improved the business value.***

2.1	Please rank the extent to which EC has been successful in using electronic catalog?	1	2	3	4	5	NA
2.2	Please rank the extent to which your organisation has added customers using new sales channel EC has offered?	1	2	3	4	5	NA
2.3	Please rank the extent to which EC has added value in providing centralized information on all shopping aspects?	1	2	3	4	5	NA
2.4	Please rank the extent to which EC has helped your organisation in understanding buyers' behaviour while shopping online?	1	2	3	4	5	NA
2.5	Please rank the extent to which you feel EC has supplemented existing distribution channel?	1	2	3	4	5	NA

3. **Direct Saving**: ***EC offers organisation and customers lower cost of delivering / receiving information respectively.***

3.1	Please rank the extent to which has the EC helped your organisation in lowering the cost of information distribution?	1	2	3	4	5	NA
3.2	Please rank the extent to which has the EC reduced marketing cost as compared to traditional commerce?	1	2	3	4	5	NA
3.3	Please rank the extent to which has the EC reduced distribution cost as compared to traditional commerce?	1	2	3	4	5	NA
3.4	Please rank the extent to which has the EC reduced customer service cost as compared to traditional commerce?	1	2	3	4	5	NA
3.5	Please rank the extent to which has the EC helped the customers through quicker reporting or through the added information value?	1	2	3	4	5	NA

4. **Time to Market**: ***EC allows reduction of the time associated with producing, delivering information and services.***

4.1	Please rank the extent to which has the EC helped your organisation in reducing time in delivering information and services to your customers?	1	2	3	4	5	NA
4.2	Please rank the extent to which has the EC reduced time to distribute or receive a product as soon as its been created?	1	2	3	4	5	NA
4.3	Please rank the extent to which has the EC helped your company in distributing information on hundred of topics to reach its targets usually decision makers as soon as it is available?	1	2	3	4	5	NA
4.4	Life cycle of some services is in hours. Please rank the extent to which has the EC helped your organisation overcome this problem?	1	2	3	4	5	NA
4.5	Please rank the extent to which has the EC reduced overall time previously required to market your product services?	1	2	3	4	5	NA

5 Customer Service: ***EC, through intelligence built into systems and the extended availability of intelligent support, can enhance customer service.***

5.1	Please rank the extent to which has the EC enhanced customer service of your organization?	1	2	3	4	5	NA
5.2	Please rank the extent to which has the EC built customer confidence and retention?	1	2	3	4	5	NA
5.3	Please rank the extent to which has the EC helped your customers in providing insights on improvement areas in current products?	1	2	3	4	5	NA
5.4	Please rank the extent to which has the EC helped your organisation in issues encountered with products or feedback for the design of new products?	1	2	3	4	5	NA
5.5	Overall to what extent has the EC influenced your CRM (Customer Relationship Management) compared to traditional methods of looking after them?	1	2	3	4	5	NA

6.Brand or Corporate image: ***EC plays an important role in building brand and corporate image and will be integral part of brand building exercise.***

6.1	Please rank the extent to which has the EC has helped your organisation in building brand image?	1	2	3	4	5	NA
6.2	As compared to non-electronic exercises of image building, please rank the extent to which has the EC been successful?	1	2	3	4	5	NA
6.3	Please rank the extent to which the presence of your web page has affirmed your brand image?	1	2	3	4	5	NA
6.4	Please rank the extent to which has the EC helped your organisation in differentiating your brand with that of competitors?	1	2	3	4	5	NA
6.5	Please rank the extent to which has the use of EC helped your organisation in providing product information to your customers in relation to corporate image?	1	2	3	4	5	NA

7.Technology Learning and Organizational Laboratory: ***EC offers companies an opportunity to experiment with new product, services and processes.***

7.1	Please rank the extent to which has the EC helped your company to experiment with new product, services and processes?	1	2	3	4	5	NA
7.2	Please rank the extent to which has the EC influenced your strategies for technologies and customer relationship?	1	2	3	4	5	NA
7.3	Please rank the extent to which has the EC helped your company to adopt new technology according to customers' feedback?	1	2	3	4	5	NA
7.4	Please rank the extent to which has the EC influenced your organisational structure in terms of flexibility and delegation?	1	2	3	4	5	NA
7.5	Please rank the extent to which has the EC helped your organisation in achieving the goals you set?	1	2	3	4	5	NA

8.Customer Relationship: ***EC allows more personalized relationships between suppliers and customers.***

8.1	Please rank the extent to which has EC helped your organisation to more personalized relationships between suppliers and customers by keeping relations active throughout the year?	1	2	3	4	5	NA
8.2	Please rank the extent to which has EC helped your customers in recording every event in the relationship such as customer asking for information about a product buying one, requesting customer service etc?	1	2	3	4	5	NA
8.3	Please rank the extent to which has EC helped your organisation for understanding the segment of customers to be targeted to similar individuals, currently non-customers?	1	2	3	4	5	NA
8.4	Please rank the extent to which has EC helped your organisation to put strategies to allow its customers to send them relevant information?	1	2	3	4	5	NA
8.5	Please rank the extent to which has EC helped your organisation in analyzing the buying pattern, needs of your customers?	1	2	3	4	5	NA

9.New Product Capabilities: ***EC processes allow for new products to be created or existing products to be innovated.***

9.1	Please rank the extent to which has EC helped your organisation for new products to be created or innovate?	1	2	3	4	5	NA
9.2	Please rank the extent to which has EC helped your organisation to create specific product for each customer based on his or her exact needs?	1	2	3	4	5	NA
9.3	Please rank the extent to which has EC helped your organisation in establishing future links between customers and suppliers together with detailed data on customer profiles, their needs, pattern of buying etc in order to improve new product development?	1	2	3	4	5	NA
9.4	Please rank the extent to which has EC given opportunity to your company in mass customization so as to have design the product himself?	1	2	3	4	5	NA
9.5	Please rank the extent to which has EC helped your customers in choosing features which matters most to him/her?	1	2	3	4	5	NA

10. New Business Models: ***EC offers new business models, based on the wide availability of information.***

10.1	Please rank the extent to which has EC helped your firm's organizational structure for new business models to its customers?	1	2	3	4	5	NA
10.2	Please rank the extent to which has EC helped selling of existing products or services and opportunity for new ones by adapting new business models?	1	2	3	4	5	NA
10.3	Please rank the extent to which has EC helped eliminating intermediaries in your case by directly connecting buyers and sellers?	1	2	3	4	5	NA
10.4	Please rank the extent to which has EC helped in reaching the target customers by adapting new business models?	1	2	3	4	5	NA
10.5	Please rank the extent to which has EC helped your organisation for in creating opportunities for customers through new business models?	1	2	3	4	5	NA

Please fill in the following also about your company .

1. *Company Name (Optional):* _____
2. *Official's name giving information (Optional):* _____
3. *Approximate annual group turn over Rs.* _____
4. *Approximate percentage of contribution of EC in total turnover* _____
5. *Annual IT spending Rs.* _____
6. *Type of services your organization is in (Please tick all applicable)*
   A) Banking B) Financial C) Insurance D) Entertainment E) Consulting
   F) Education G) Software H) Telecommunication
   I) E-Commerce Solution J) Other – Pls specify: _____
7. *Contact number / email / web site details:* _____

_____

Thanks a million for your time and cooperation.

CODE NO_____

RESPONSE SHEET

1. Company Name_____

2. Officials Name Giving information_____

3. Type of service organization_____

4. e-mail,web site,address _____

_____

_____-

5. Approximate annual group turn over Rs _____

6. Annual IT spending Rs _____

7. Approximate percentage of contibution of EC in total turn over _____

8. Desire to share the findings _____-

1. Product Promotion	1.1	1.2	1.3	1.4	1.5	
2. New Sales Channel	2.1	2.2	2.3	2.4	2.5	
3. Direct Saving	3.1	3.2	3.3	3.4	3.5	
4. Time to Market	4.1	4.2	4.3	4.4	4.5	
5. Customer Service	5.1	5.2	5.3	5.4	5.5	
6. Brand Image	6.1	6.2	6.3	6.4	6.5	
7. Techonology Learning	7.1	7.2	7.3	7.4	7.5	
8. Customer Relationship	8.1	8.2	8.3	8.4	8.5	
9.New Product Capabilities	9.1	9.2	9.3	9.4	9.5	
10. New Business Models	10.1	10.2	10.3	10.4	10.5	

University Research Centres of Electronic-Commerce		
Centres of E-Commerce	**Web Address**	**E-Mail Ids**
EUROPE		
Center for Electronic Commerce, Brno University of Technology, CZ	www.e-commerce.cz	
Center for Electronic Commerce, Copenhagen Business School	www.inf.cbs.dk	nba.inf@cbs.dk
Center for Electronic Commerce and Media Management, University of Cologne, Germany	www.mm.unikoel.de	dagmar.woester@unikoeln.de
Centre for Electronic Commerce, University of Sunderland, UK	www.cec.sunderland.ac.uk	kevin-ginty@sunderland.ac.uk
Chair for IS and Interorganizational Systems, University of Muenster, Germany	www wi uni-muenster de	
Competence Center Electronic Markets, University of St. Gallen, Switzerland	www.businessmedia.org	
Department of Informatics, Copenhagen Business School	www.cbs.dk	anderson@cbs.uk
Department of Information Systems, University of Essen	http://psun0.wi-inf-essen.de	pernul@wi-inf.essen.de
Electronic Commerce Research Centre, University of Ulster, UK	www.busmgt.ulst.ac.uk	
IECRC, De Montfort Graduate Business School, UK	www.iecrc.org	sagar.gohel@bt.com
Information Systems Research Group, University of Erlangen-Nuremberg	http://orgbrain.wi1.uni-erlangen.de	
Information Technology Research Institute, University of Jyväskylä	www.titu.jy.fi	jarmo.ahonen@titu.jyu.fi
Institute for Information Systems, University of Muenster	www.wi.uni-muenster.de	
Research Center for Computer and Law (CRID), University of Namur	www.droit.fundp.acbe	jacques.gerard@fundp.ac.be
The Dutch Ph.D. Network for Academic Research on Electronic Commerce and Interorganizational	http://edispuut.net	adelaar@telin.nl
The International Electronic Commerce Research Centre, De Montfort University, UK	www.dmu.ac.uk	pdf@dmu.ac.uk
VRFlow project, University of Oulu	http://vrflow.oulo.fi	
North America		
Atlanta Electronic Commerce Resource Center, University of Sunderland	www.ec.rc.gatech.edu	ecrcinfo@ecrc.gatech.edu
Center for Digital Commerce, Syracuse University	http://istweb.syr.edu	rghai@syr.edu
Center for Electronic Commerce, The Technical University of British Columbia	www.techbc.ca	cec@techbc.ca

Center for Global Electronic Commerce, Pampin College of Business, Virginia	www.cob.vt.edu	ecommerce@vt.edu
Center for Information Technologies, California State University	www.csulb.edu	nmchung@csulb.edu
Center for The Study of Electronic Commerce, University of Denver	www.dcb.du.edu	dmccubbr@du.edu
Creighton E-Commerce Research Centre, Creighton University	http://ecommerce.creighton.edu	ghafer@creighton.edu
E-center for E-business, George Mason University	http://ise.gmu.edu	
eCommerce Institute, Georgia State University	www.eci.gsu.edu	
Information Industry Initiative, University of Minnesota	www.iii.csom.umn.edu	iii@csom.umn.edu
Information Systems Research Center, University of Baltimore	http://business.ubalt.edu	rberman@ubmail.ubalt.edu
McMaster E-commerce Research Centre, McMaster University, CA	http://merc.mcmaster.ca	
The Electronic Commerce Centre, University of New Brunswick	www.ec-centre.com	dan.daley@bdc.ca
The Fisher Center for Management & Information Technology, University of California, Berkley	http://haasberkely.edu	segev@haas.berlely.edu
MIDDLE EAST and AFRICA		
Department of Information Systems, University of the Western Cape, South Africa	www.uwc.ac.za	abytheway@uwc.ac.za
ASIA		
Centre for eBusiness & Communication, Swinburne University of Technology, AU	www.ld.swin.edu.au	
Centre for Electronic Commerce, Monash University, AU	www-cec.buseco.monash.edu.au	cec@buseco.monash.edu.au
Centre for Electronic Commerce and Communications, University of Ballarat, AU	www.cecc.com.au	
Centre for Electronic Commerce & Internet Studies, Murdoch University, AU	www.it.murdoch.edu.au	cec@it.murdoch.edu.au
CollECTeR@Deakin, Deakin University, AU	http://mis.deakin.edu.au	tanyac@deakin.edu.au
Electronic Commerce for Global Business, University of New Castle, AU	http://ecommerce.newcastle.edu	maryanne@newcastle.edu.au
Electronic Commerce Research Group, The University of Melbourne, AU	www.dis.uniweb.edu.au	r.johnston@dis.uniweb.edu.au
Electronic Commerce Research Unit, Victoria University, AU	www.business.vu.edu	Arthur.Tatnall@vu.edu.au
Electronic Commerce Special Interest Group, The University of Southern Queensland, AU	www.usq.edu.au	Malcolm.Mckay@usq.edu.au
Secure Electronic Commerce Research, University of Wollongong, AU	www.itacs.uow.edu.au	joan_cooper@uow.edu.au
Tasmania Electronic Commerce Centre, University of Tasmania, AU	www.infosys.utas.edu.au	chris.keen@utas.edu.au

International Organisations in Electronic Commerce		
Organisations	**Web Sites**	**E-Mail Ids**
International EDI Uniform Code Council	www.uc-council.org	Info@uc-council.org
World Customs Organisation	www.wcoomd.org	Information@wcood.org
The World Bank	www.worldbank.org	feedback@worldbank.org
World Savings Banks Institute	www.savings-bank.com	malou.doumen@savings-banks.com
World Trade Organization	www.wto.org	enquiries@wto.org
World Chambers Network	www.worldchambers.com	Secretariat@worldchambers.com
Association for Enterprise Integration	www.afei.org	Mbourke@afei.org
International Chamber of Commerce	www.iccwbo.org	Geninfo@iccasia.com.uk
OECD	www.oecd.org	personnel.contact@oecd.org
International Telecommunication Union	www.itu.int	ecdc@itu.int

Source: http:www.oecd.org

National Organisations in Electronic Commerce		
Organisations	**Web Sites**	**E-Mail Ids**
Australian Electronic Business Network	www.aebn.org	info@ause.net
Electronic Commerce Platform Nederland	www.ecp.nl	info@ecp.nl
TDB Singapore Trade Development Board	www.tdb.gov.sg	jobopp@tdb.gov.sg
Singapore Department of Statistics	www.singstat.gov.sg	info@singstat.gov.sg
World Trade Center Ljubljana	www.wtc-lj.si	wtc-lj@wtc-lj.si
eCom	http://ecom.fov.uni-mb.si	Gricar@uni-lj.si
Singapore E-Commerce	www.ec.gov.sg	ecinfo@ida.gov.sg info@ec.gov.sg
Department of Commerce	www.ecommerce.gov	Secretariat@doc.gov
E- Centre UK	www.e-centre.org.uk	info@e-centre.org.uk
Electronic Commerce Finland- ECF	www.ecf@.fi	ecf@ecf.fi

Source: http:www.oecd.org

Top Fifty Indian Web Sites and their Origin		
Web Address	**Type**	**Date of Origin**
http://www.rediff.com	Portal	2/8/97
http://www.mapsofindia.com	Vortal/Maps	14/09/98
http://www.nic.in	Hosting	NA
http://www.indiainfo.com	Portal	28/02/95
http://www.indiatimes.com	Portal	22/12/96
http://www.123india.com	Search/Portal	22/10/96
http://www.dgreetings.com	Vortal/Greetings	13/09/99
http://www.indiaexpress.com	News	27/04/96
http://www.indiamart.com	B2B+Hosting	3/8/96
http://www.expressindia.com	Portal	13/11/96
http://www.timesofindia.com	News	8/4/96
http://www.smashits.com	Vortal/Music	4/3/99
http://www.indiafm.com	Vortal/Music	15/06/98
http://www.the-hindu.com	News	1/3/96
http://www.theholidayspot.com	Vortal/Greetings	5/8/99
http://www.economictimes.com	News	12/4/96
http://www.sify.com	Portal	6/10/98
http://www.chennaionline.com	Portal	14/08/97
http://www.bawarchi.com	Vortal/Reciepe	31/05/97
http://www.kamat.com	Portal	17/07/97
http://www.indiaserver.com	News/Portal	20/07/95
http://www.samachar.com	News	31/05/97
http://www.indolink.com	Portal	30/05/95
http://www.india-today.com	News	24/12/96
http://www.khoj.com	Search	24/02/97
http://www.webindia.com	Portal	12/6/94
http://www.indya.com	Portal	9/9/99
http://www.naukri.com	Vortal/Jobs	27/03/97
http://www.internetindia.com	Portal	25/11/95
http://www.indiainfoline.com	Vortal/Finance	21/12/98
http://www.indianvisit.com	Vortal/Travel	21/12/99
http://www.khel.com	Vortal/Sports	5/4/97
http://www.vsnl.net.in	ISP	29/12/99
http://www.itihaas.com	Vortal/History	31/03/97
http://www.criclive.com	Vortal/Cricket	19/04/99
http://www.rbi.org.in	Bank	1/1/96
http://www.go4i.com	Portal	12/4/98
http://www.artindia.net	Vortal/Dance	21/09/98
http://www.ciol.com	Portal	9/9/93
http://www.hindustantimes.com	News	14/08/96
http://www.bollywoodnet.net	Vortal/Entertainment	11/3/99
http://www.indiaa2z.com	Search	15/12/98
http://www.dhan.com	Vortal/Finance	27/05/97
http://www.careerindia.com	Vortal/Jobs	1/10/97
http://www.fashionindia.net	Vortal/Fashion	9/6/97
http://www.webdunia.com	Portal/Hindi	31/07/99
http://www.pugmarks.com	Hosting	15/05/96
http://www.allindia.com	News	12/3/97
http://www.epatra.com	Vortal/Mail	18/01/99
http://www.indiagov.org	Government	25/05/96

Source: http://www.bestindiansites.com/top 50 indian/second.html.

Top Indian IT Companies	
Company Name	**Web Address**
Aftek Business Machines Ltd	www aftek com
Aptech Ltd	www aptech-worldwide com
BFL Software	www bflsoftware com
Citicorp Securities	www citicorpsecurities com
CMC Ltd	www cmcltd com
DSQ Software	www dsqsoftware com
Fujitsu ICIM	www icim com
Global Telesystems	www gtl co in
HCL Infosystems	hclinfsystems com
Hughes Software Systems	www hssworld com
Infosys Technologies	www infy com
Infotech Enterprises	http //infotech stph net
KLG System Ltd	www klgsystel com
Leading Edge Systems	www lesi com
Maars Software International	www mars-soft com
Mastek Ltd	www mastek com
NIIT	www niit com
Onward Technologies Ltd	www onwardgroup com
Pentafour Software and Exports Ltd	www pentafour com
Polaris Software Lab Ltd	www polaris com
PSI Data Systems Ltd	www psi soft net
R S Software Ltd	www rssoftware com
Ramco Systems Ltd	www ramco com
Rolta Ltd	www rolta com
Satyam Computer Services Ltd	www satyam com
Sierra Optima Ltd	www sieraopt com
Silverline Industries Ltd	www silverlne com
Sonata Software Ltd	www sonata-software com
Tata Elxsi Ltd	www tataelxsi com
Tata Infotech Ltd	www tatainfotech com
Visualsoft Ltd	www visualsoft-india com
VXL Instruments Ltd	www mostwanteddomains com
Wipro Ltd	www wipro com

Appendix –V

Calculations for F and Z Tests

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests

Reference to Table No. 4.2

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.95
Variance	0.053454	0.102444
Observations	10	10
df	9	9
F	**0.52179**	
P(F<=f) one-tail	0.173321	
F Critical one-tail	0.314575	

Reference to Table No. 4.3

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.817
Variance	0.0534544	0.09557889
Observations	10	10
Df	9	9
F	**0.5592704**	
P(F<=f) one-tail	*0.1998473*	
F Critical one-tail	0.314575	

Reference to Table No.4.4

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.629
Variance	0.0534544	0.04047667
Observations	10	10
Df	9	9
F	**1.3206237**	
P(F<=f) one-tail	0.3426951	
F Critical one-tail	3.1788971	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests Continued

Reference to Table No.4.5

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.55
Variance	0.0534544	0.505
Observations	10	10
Df	9	9
F	**0.1058504**	
P(F<=f) one-tail	0.0012942	
F Critical one-tail	0.314575	

Reference to Table No.4.6

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.886
Variance	0.0534544	0.07656
Observations	10	10
df	9	9
F	**0.6982033**	
P(F<=f) one-tail	0.300565	
F Critical one-tail	0.314575	

Reference to Table No.4.7

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.412
Variance	0.0534544	0.12312889
Observations	10	10
df	9	9
F	**0.4341341**	
P(F<=f) one-tail	0.1148991	
F Critical one-tail	0.314575	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests Continued

Reference to Table No. 4.8

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.954
Variance	0.0534544	0.07240444
Observations	10	10
df	9	9
F	**0.7382757**	
P(F<=f) one-tail	0.3292836	
F Critical one-tail	0.314575	

Reference to Table No. 4.9

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.446
Variance	0.0534544	0.06433778
Observations	10	10
df	9	9
F	**0.8308407**	
P(F<=f) one-tail	0.3935077	
F Critical one-tail	0.314575	

Reference to Table No. 4.10

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	3.055
Variance	0.0534544	0.05947222
Observations	10	10
df	9	9
F	**0.8988136**	
P(F<=f) one-tail	0.4381708	
F Critical one-tail	0.314575	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests Continued

Reference to Table No. 4.11

Z-Test: Two Sample for Means		
	Variable 1	*Variable 2*
Mean	2.719	2.291
Known Variance	2.8	2.64
Observations	10	10
Hypothesized Mean Difference	0	
Z	**0.580289**	
P(Z<=z) one-tail	0.2808598	
z Critical one-tail	1.644853	
P(Z<=z) two-tail	0.5617197	
z Critical two-tail	1.9599611	

Reference to Table No. 4.12

Z-Test: Two Sample for Means		
	Variable 1	*Variable 2*
Mean	2.719	2.528
Known Variance	2.92	2.93
Observations	10	10
Hypothesized Mean Difference	0	
Z	**0.2497212**	
P(Z<=z) one-tail	0.4014015	
z Critical one-tail	1.644853	
P(Z<=z) two-tail	0.8028031	
z Critical two-tail	1.9599611	

Reference to Table No. 4.13

Z-Test: Two Sample for Means		
	Variable 1	*Variable 2*
Mean	2.719	2.61
Known Variance	2.82	3.1
Observations	10	10
Hypothesized Mean Difference	0	
Z	**0.141666**	
P(Z<=z) one-tail	0.4436719	
z Critical one-tail	1.644853	
P(Z<=z) two-tail	0.8873438	
z Critical two-tail	1.9599611	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests Continued

Reference to Table No. 4.14

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	3.731
Variance	0.0534544	0.152121
Observations	10	10
Df	9	9
F	**0.351394**	
P(F<=f) one-tail	0.0675817	
F Critical one-tail	0.314575	

Reference to Table No. 4.15

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	3.348
Variance	0.0534544	0.150062
Observations	10	10
df	9	9
F	**0.3562152**	
P(F<=f) one-tail	0.0700594	
F Critical one-tail	0.314575	

Reference to Table No. 4.16

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	3.67
Variance	0.0534544	0.7368
Observations	10	10
df	9	9
F	**0.0725495**	
P(F<=f) one-tail	0.0002956	
F Critical one-tail	0.314575	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests Continued

Reference to Table No. 4.17

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.5
Variance	0.0534544	0.276356
Observations	10	10
Df	9	9
F	**0.1934263**	
P(F<=f) one-tail	0.0112216	
F Critical one-tail	0.314575	

Reference to Table No. 4.18

Z-Test: Two Sample for Means		
	Variable 1	*Variable 2*
Mean	2.719	2.558
Known Variance	2.92	2.95
Observations	10	10
Hypothesized Mean Difference	0	
Z	**0.2101391**	
P(Z<=z) one-tail	0.4167796	
z Critical one-tail	1.644853	
P(Z<=z) two-tail	0.8335592	
z Critical two-tail	1.9599611	

Reference to Table No. 4.19

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.964
Variance	0.0534544	0.115271
Observations	10	10
Df	9	9
F	**0.463728**	
P(F<=f) one-tail	0.1338866	
F Critical one-tail	0.314575	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests Continued

Reference to Table No. 4.20

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.565
Variance	0.0534544	0.163361
Observations	10	10
Df	9	9
F	**0.3272165**	
P(F<=f) one-tail	0.0557604	
F Critical one-tail	0.314575	

Reference to Table No. 4.21

Z-Test: Two Sample for Means		
	Variable 1	*Variable 2*
Mean	2.719	2.54
Known Variance	2.94	2.96
Observations	10	10
Hypothesized Mean Difference	0	
Z	**0.2330382**	
P(Z<=z) one-tail	0.4078659	
z Critical one-tail	1.644853	
P(Z<=z) two-tail	0.8157319	
z Critical two-tail	1.9599611	

Reference to Table No. 4.22

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	2.9
Variance	0.0534544	0.135378
Observations	10	10
Df	9	9
F	**0.3948539**	
P(F<=f) one-tail	0.0912407	
F Critical one-tail	0.314575	

Appendix-V
Showing the Calculation of 'F' and 'Z' Tests

Reference to Table No. 4.23

F-Test Two-Sample for Variances		
	Variable 1	*Variable 2*
Mean	2.719	3.42
Variance	0.0534544	0.137444
Observations	10	10
df	9	9
F	**0.3889167**	
P(F<=f) one-tail	0.0878411	
F Critical one-tail	0.314575	

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